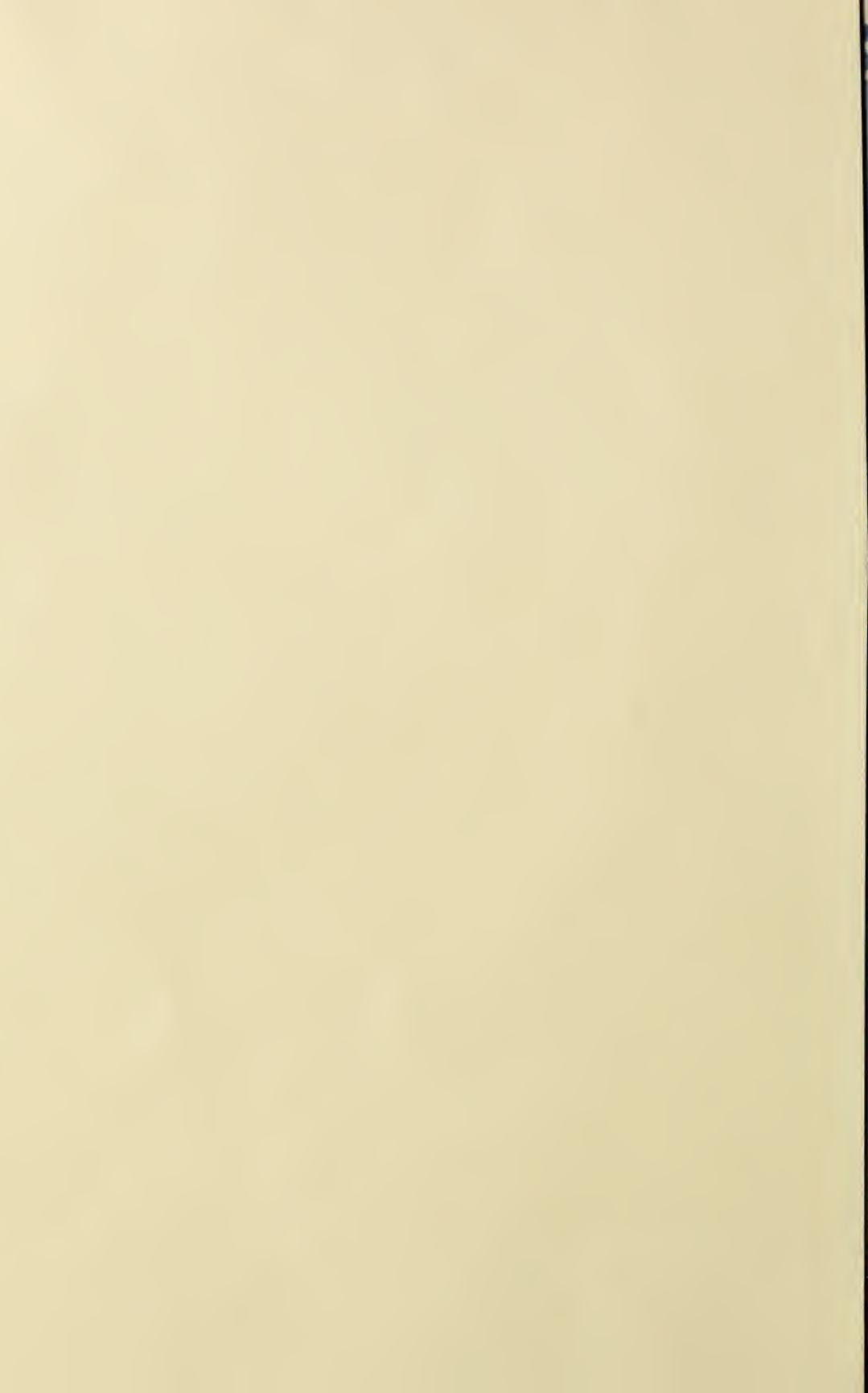


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# Gleanings in Bee Culture



"May----painting pictures mile on mile."  
--Emerson,



## Bee Supplies

Send us your orders for your 1922 requirements NOW. We guarantee our goods to be first class in workmanship and material.

### Special Prices on Tin Honey Containers

5-lb. Pails, per 50.....	\$ 3.75
5-lb. Pails, per 100.....	7.00
10-lb. Pails, per 50.....	5.50
10-lb. Pails, per 100.....	10.50
60-lb. Sq. Cans, per case of two.	1.25

### No. 2 Section Honey Boxes

50,000 $\frac{1}{4} \times 1\frac{1}{4} \times 1\frac{1}{2}$ plain...	\$8.50 per 1000
25,000 $\frac{1}{4} \times 1\frac{1}{4} \times 1\frac{1}{4}$ beeway	10.00 per 1000

Write for our new Catalog.

**A. H. Rusch & Son Co.**

*Reedsville, Wisconsin*

## \$1 Order Your \$1 Queens Now

Pay two weeks before shipment. Just think of it! Only one dollar for one of my bright three-banded Northern-bred Italian queens. After nineteen years of select breeding, I have produced a strain of bees that get the honey and stand the northern winter. Last year every order was filled by return mail; expect to do the same this year.

This is the kind of letters I receive daily:

"Dear Mr. Major:

"How early in spring could you fill an order for one dozen Italian queens? My experience and observation with your strain of Italians have shown them to be extremely gentle, superior as workers and unexcelled in the beautifully white and even capping of the honey.

"Yours very truly,

"Orel L. Hershiser."

Mr. Hershiser is one of our State inspectors and has been a beekeeper almost all his life; also inventor of the Hershiser wax press. "Does he know good bees when he sees them?" "Does a duck swim?" I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

Select untested, from 1 to 100, \$1.00 each. Select tested, \$1.50 each. Extra-select breeders, \$5.00 each. All candy in queen-mating cages mixed to government regulations. All orders greatly appreciated and acknowledged the same day received.

H. N. MAJOR, South Wales, N. Y.

## 1922 Bees and 1922 Queens of Quality

*Get your orders in early.*

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders.

### *April, May and June*

Untested Queens....	\$1.50; 25 to 99, \$1.30
Sel. Untested Queens..	1.75; 25 to 99, 1.50
Tested Queens .....	2.25; 25 to 99, 2.00
Select Tested Queens..	2.75; 25 to 99, 2.25

### *July to November*

Untested Queens....	\$1.25; 25 to 99, \$1.00
Sel. Untested Queens..	1.50; 25 to 99, 1.25
Tested Queens .....	2.00; 25 to 99, 1.50
Select Tested Queens..	2.25; 25 to 99, 2.00

Write for prices on 100 or over.

1 1-frame Nucleus with Tested Breeding Queen .....	\$10.00
1-pound Package Italian Bees.....	\$2.25
2-pound Package Italian Bees.....	3.75
3-pound Package Italian Bees.....	5.25

Quantity prices on application.


Safe arrival and satisfaction guaranteed to any point in the United States.

**THE A. I. ROOT CO. OF TEXAS**

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# CONTENTS

## MAY, 1922

Honey Markets .....	280-281
Editorials .....	293-295
Breeding and Requeening.....M. C. Richter	296-298
Brood Disease Variations.....A. P. Sturtevant	298-302
The Extracting Equipment.....H. H. Root	302-305
European Foul Brood.....H. B. Arbuckle	306
Northern California.....D. Stuart	307
Grabbing the Honey Flow.....Arthur C. Miller	307-308
Heavy Yields in Montana.....Claude M. Pease	308
Siftings.....J. E. Crane	309
The Land of Contrasts.....Constance Root Boyden	310-311
Beekeeping as a Sideline.....Grace Allen	312-313
From North, East, West and South.....	314-318
Heads of Grain from Different Fields.....	319
Just News .....	320
Who's Who in Apiculture.....	321
Gleaned by Asking.....Geo. S. Demuth	322-323
Talks to Beginners.....Geo. S. Demuth	324-326
Our Homes.....A. I. Root	327-329

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### THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

#### Editorial Staff

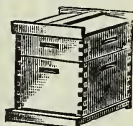
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Time Saved**

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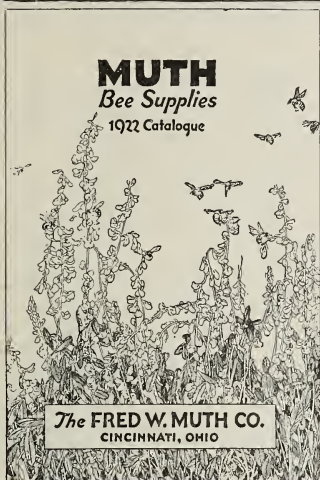
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We also manufacture Hoffman frames, dovetailed beehives, etc.  
Quality unexcelled; prices on request.

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(Manufacturers of Weed Process Foundation.)



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You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

**THE FRED W. MUTH COMPANY,**  
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Cincinnati, Ohio.

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Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

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That Bees Need**

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Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

**G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.**  
For Sale by all Dealers.



## HONEY MARKETS

### U. S. GOVERNMENT MARKET REPORTS.

#### Information from Producing Areas (First Half of April).

**CALIFORNIA POINTS.**—Outlook continues favorable for a heavy honey flow, if weather conditions are normal. Supplies of white honey are practically cleaned up, but lower grades are more plentiful. Lack of export demand for amber honeys is depressing to prices. As syrups and sugars are now down in price, honey sold in competition with these sweets must conform to their levels.

**PACIFIC NORTHWEST.**—Honey plants reported two weeks late but otherwise promising. Stores are said to be very light, with many colonies being fed.

**INTERMOUNTAIN REGION.**—Heavy winter losses in unprotected apiaries continue to be reported, reaching as high as 70% in some sections. Hives properly protected have come through fairly well. Some pollen has been gathered, and brood-rearing, which is badly needed, has started in the strongest colonies. Stores are accordingly being rapidly used up. Stocks of extracted honey continue to move fairly readily, and extracted honey will probably be nearly cleaned up before the new crop is ready. Considerable comb may be carried over, as little interest is observable in this class of goods. Carlot sales of white sweet clover and alfalfa range 8-8½c per lb., f. o. b., with less-than-carlot sales in 5-gal. cans up to 12c per lb. The price of comb is lower; carloads of fancy and No. 1 white reported selling at \$3.00-3.50; few, \$4.00 per 24-section case. In Arizona, colonies are breeding up strongly. Prospects are good in this section for a heavy mesquite flow, and several localities report the flow already on.

**TEXAS POINTS.**—Bees are building up and many colonies are said to be preparing to swarm. Mesquite in southwest Texas appears spotty. Some sections report plants heavy with buds; others that blossoms will be light. Other honey plants said to be coming on well. Crop outlook generally more favorable, due to recent rains, which in some areas have totaled 10 inches since last report. Present nectar flow only enough for use in the hives. Practically no sales reported.

**EAST CENTRAL AND NORTH CENTRAL STATES.**—Colonies are reported in good condition and are said to have come through unusually well. Bees are rather short of stores, however, and many colonies will need to be fed. Prospects bright for coming season. Clover has been helped by recent heavy rains and is showing up well. Supplies becoming exhausted. Few sales white clover in 5-gal. cans reported in less-than-carlots at 11½-14c per lb., with few large lot quotations during past month of 10-11c per lb. Trade in bee supplies in Michigan said to exceed that of most recent years for March and early April. Small lot sales white clover comb reported at \$4.50 per case.

**PLAINS AREA.**—Some colonies reported to have suffered heavy losses due to lack of stores; others came through fairly well. Many colonies requiring spring feeding to prevent starvation. Sweet clover prospects good if season favorable, but white clover outlook not good due to lack of snow during winter over much of area. Recent heavy fall of snow and rain will help. Supplies almost exhausted. Few sales 5-gal. cans white extracted reported 10-13½c for small lots.

**SOUTHEASTERN SECTION.**—The spring flow is now on, but little surplus stored to date, as colony condition generally below normal. Most colonies are living on what they gather. High water in Louisiana swamps should prolong spring flow at least two weeks in that state, while Georgia reports that rain is needed. Florida has a small crop of orange blossom honey. Saw palmetto is blooming in that state, but due to extremely dry weather is yielding little honey. It is also said to be too dry for gallberry nectar. Heavy winds said to be reducing amount of bloom in Florida. Demand has increased recently in some sections. Few sales tupelo extracted reported from Georgia in barrels at 10c per lb. Package bee shippers are beginning to get out a few early orders, but are later than usual with the bulk of their orders.

**NORTHEASTERN STATES.**—Fruit trees are far ahead of normal, and plenty of pollen is also

available from maples. Brood-rearing is advancing rapidly. Clover and other plants generally promise well. Bees are said to have wintered the best in years with only light losses thus far. Some colonies sufficiently supplied with stores, but many others must be fed liberally or heavy loss will result. Very few sales, as supplies practically exhausted.

### Telegraphic Reports from Important Markets.

Arrivals include receipts during preceding two weeks.

**BOSTON.**—Light demand and movement for both comb and extracted. Comb: Sales to retailers, New York, 24-section cases No. 1, white clover, \$6.50-7.00; Vermont, 20-section cases No. 1, white clover carton stock \$6.50-7.00. Extracted: Sales to confectioners and bottlers, Cuba and Porto Rico, amber 80-85c per gal.; California, white sage, 13½-16c per lb. Brokers carlot quotations, delivered Boston basis, per lb., California, light amber 8-9c, amber 7-7½c.

**CHICAGO.**—Demand and movement unusually slow, some dealers doing practically nothing. Low prices of sugar syrups given as main reason for slow movement. Prices remain about the same. Extracted: Sales to bottlers, candy manufacturers and bakers, per lb., Arizona, Idaho and Montana, alfalfa and sweet clover white 10½-11c, light amber 9-9½c; Minnesota and Wisconsin, mixed white, basswood and clover, 11-11½c; occasional small sales 12½c. California, mixed mountain flowers white 11c. Comb: Sales to retailers, 24-section cases Iowa, clover No. 1, \$4.75-5.00; No. 2, \$3.00-4.00; Idaho and Montana, alfalfa No. 1, \$4.50-5.00. Beeswax: Receipts moderate. Demand and movement moderate, market has been generally steady for past two weeks but just at present is a trifle easier. Sales to wholesale druggists, laundry supply houses and harness makers, per lb., California, Arizona, Idaho and Montana, best light 26-29c, dark 23-25c; South and Central American, light 21-25c, dark 15-17c.

**MINNEAPOLIS.**—Comb: Supplies liberal. Demand and movement slow, market dull. Sales to retailers, Western, 24-section cases alfalfa and sweet clover mixed No. 1, \$5.00-5.50; No. 2, \$4.50. Extracted: Demand and movement light, market steady. Sales to retailers, confectioners and bakers in 5-gal. cans: Western, light amber alfalfa and sweet clover, 12c per lb; Minnesota, white clover, 15c per lb.

**NEW YORK.**—Domestic receipts light, foreign receipts limited. Supplies rather light. Demand moderate, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 7½-8½c; light amber sage, 9-10c; white sage, 11-12c; white orange blossom, 12-13c, few 14c; Intermountain Region, white alfalfa and sweet clover 10½-11c; New York, white clover, 11-12c; buckwheat 7-8c. South American, refined best, 65-70c per gal.; poorer low as 60c per gal. Beeswax: Foreign receipts limited. Supplies limited. Demand fair, market firm. Spot sales to wholesalers, manufacturers and drug trade, per lb., South American and West Indian, light best, 25-27c; few high as 50c; poorer low as 23c; dark, 18-20c; African, dark, mostly 19-20c; few, 21c.

**PHILADELPHIA.**—Practically no receipts. Supplies generally very light. There seems to be no demand or movement for bulk stock but bottled goods are reported meeting a fair demand and prices holding firm. Beeswax: Supplies light. Market again slightly stronger. Sales to manufacturers, per lb., South American light, 25½c; African, dark, 17½-18½c.

**ST. LOUIS.**—Demand reported light, movement slow, market quiet. Comb: Sales to retailers in small lots of 24-section cases, Colorado and Northwestern, white clover and alfalfa No. 1, heavy, \$5.50-6.00. Extracted: Sales to wholesalers and jobbers, per lb., California, light amber alfalfa, mostly around 9c; Southern, light amber, various mixed flavors, few sales, 9c. Beeswax: Ungraded average country-run wax quoted nominally at 23c per lb. to jobbers.

H. C. Taylor, Chief of Markets.

### Special Foreign Quotations.

**CUBA.**—Honey is quoted at 40c a gallon; wax, 30c a quintal. Adolfo Marzol, Matanzas, Cuba, April 8.

## The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in April we sent to actual honey producers the following questions: 1. What portion if any of the 1921 crop is still in the hands of producers in your locality? Give answer in per cent. 2. What prices are producers receiving for extracted honey at their station when sold to large buyers? 3. What are prices to retailers in small lots? (a) Comb honey, fancy or No. 1, per case? (b) Extracted honey in 5-lb. pails or other retail packages? 4. How is honey now moving on the market in your locality? Give answer in one word as slow, fair, rapid. 5. What is the condition of the colonies in

your locality compared with normal as to numbers of bees and stores? Give answer in per cent. (a) Number of bees? (b) Amount of brood? (c) Amount of stores for spring brood-rearing? 6. What is the condition of the honey plants at this time in your locality as compared with normal? Give answer in per cent. 7. How does the early honey flow thus far compare with normal in your locality? Give answer in per cent. The answers as returned by our honey and bee reporters are as follows:

State.	Reported by	Crop Unsold.	Extr. Wh'sale.	To Retailers. Comb.	Extr.	Movem't.	Colonies. Bees.	Brood.	Stores.	Plant. Cond.	Honey Flow.
Ark.	J. V. Ormond.....	0	...	...	...	...	100	150	150	150	...
Ark.	J. Johnson.....	0	...	...	...	...	100	110	100	100	...
B. C.	W. J. Sheppard.....	0	...	...	...	...	75	75	75	100	...
Cal.	M. C. Richter.....	20	\$11	...	\$1.25	Rapid	70	70	60	60	60
Cal.	L. L. Andrews.....	10	10	\$6.00	.90	Fair	100	100	...	100	75
Cal.	G. Larin.....	10	11	...	...	Fair	75	75	75	100	...
Cal.	M. A. Saylor.....	2	08	4.00	.75	Fair	90	90	90	100	100
Colo.	B. W. Hopper.....	0	...	...	...	Slow	75	75	80	75	...
Colo.	J. H. Wagner.....	...	12	5.50	.75	Fair	85	85	100	90	...
Colo.	J. A. Green.....	...	12	...	...	Slow	95	95	90	100	...
Conn.	A. Latham.....	...	...	...	...	Fair	100	...	100	100	...
Fla.	C. C. Cook.....	10	11	...	.75	Fair	100	100	125	125	100
Fla.	H. Hewitt.....	25	...	...	.85	Slow	100	100	...	125	100
Fla.	W. Lamkin.....	2	11	...	.65	Slow	100	100	...	100	25
Ga.	J. J. Wilder.....	15	10	...	.75	Slow	100	100	100	100	100
Ill.	C. F. Bender.....	0	...	6.00	...	Good	95	100	75	110	...
Ill.	A. L. Kildow.....	1	...	...	...	Rapid	110	...	98	105	...
Ind.	J. Smith.....	0	...	...	...	Fair	75	100	25	100	...
Ind.	E. S. Miller.....	25	...	6.00	1.00	Slow	100	100	90	95	...
Iowa.	W. S. Pangburn.....	10	14	...	.95	Fair	100	...	...	100	...
Iowa.	E. G. Brown.....	10	10	...	.80	Fair	100	90	80	100	...
Iowa.	F. Coverdale.....	0	...	...	...	Fair	100	100	25	70	...
Kan.	C. D. Mize.....	10	...	6.00	.75	Slow	100	100	75	120	...
Kan.	J. A. Nininger.....	0	...	6.00	.75	Slow	90	75	90	90	...
Ky.	P. C. Ward.....	...	...	...	...	Slow	100	100	100	100	...
La.	E. C. Davis.....	10	.09	...	.75	Fair	100	100	100	100	150
Maine.	O. B. Griffin.....	5	...	7.00	...	Slow	100	...	90	...	...
Md.	S. G. Crocker, Jr.....	5	...	4.85	.75	Slow	90	90	90	100	...
Mass.	O. M. Smith.....	0	...	...	...	Slow	100	100	100	100	...
Mich.	I. D. Bartlett.....	5	...	...	.85	Slow	115	100	100	125	...
Mich.	F. Markham.....	5	12	...	.80	Slow	125	100	100	125	...
Mich.	L. S. Griggs.....	...	...	6.00	1.00	Slow	100	...	90	100	...
Miss.	R. B. Willson.....	...	.07	5.25	1.00	Fair	100	100	100	100	125
Nev.	J. W. Romberger.....	0	12	6.25	.95	Fair	80	50	50	75	...
Nev.	E. G. Norton.....	0	...	6.00	...	Slow	...	...	75	100	...
Nev.	L. D. A. Prince.....	0	...	...	...	Fair	50	25	25	...	...
N. J.	E. G. Carr.....	10	...	...	...	Slow	90	90	100	90	...
N. Y.	Adams & Myers.....	...	...	6.00	1.00	Rapid	100	85	80	30	...
N. Y.	G. B. Howe.....	...	...	...	1.15	Fair	95	100	75	100	...
N. Y.	N. L. Stevens.....	0	...	...	...	...	110	100	100	100	...
N. Y.	F. W. Lesser.....	0	...	4.80	1.00	Slow	80	75	125	90	...
N. Y.	A. J. Spahn.....	10	...	...	...	Slow	100	100	100	100	...
N. C.	C. S. Bumgarner.....	...	...	...	...	...	110	125	100	125	...
N. C.	C. L. Sams.....	0	...	...	...	Fair	100	100	90	100	...
Ohio.	E. G. Baldwin.....	...	...	...	...	...	95	95	100	85	...
Ohio.	F. Leininger.....	...	10	4.80	.75	Fair	100	...	85	80	...
Ohio.	J. F. Moore.....	5	12	4.50	.85	Slow	75	50	50	100	...
Okla.	J. Heuelsen.....	0	...	...	...	...	60	50	20	100	...
Okla.	C. F. Stiles.....	...	...	...	1.00	Slow	100	100	55	100	...
Ore.	E. J. Ladd.....	...	...	3.50	...	Slow	60	90	90	100	...
Ore.	H. A. Scullen.....	0	...	...	...	Fair	...	...	...	100	...
Pa.	G. H. Rea.....	0	...	...	...	Fair	100	100	100	100	...
Pa.	H. Beaver.....	2	...	...	.60	Slow	100	100	100	100	...
Pa.	C. N. Greene.....	5	.08	5.50	.65	Slow	100	90	20	100	...
Pa.	D. C. Gilham.....	6	...	7.00	1.00	Fair	100	100	75	110	...
R. I.	A. C. Miller.....	0	...	...	...	Slow	100	100	150	100	...
S. C.	A. S. Conradi.....	0	...	6.00	...	Fair	100	100	95	100	...
S. D.	L. A. Syverud.....	5	...	3.85	.60	Fair	100	90	90	100	...
Tenn.	J. M. Buchanan.....	0	...	...	...	Slow	100	110	90	80	...
Tenn.	G. M. Bentley.....	0	...	...	1.10	Slow	100	100	50	75	...
Texas.	J. N. Mayes.....	1	...	...	...	...	25	25	50	60	50
Texas.	T. A. Bowden.....	8	...	...	.75	Slow	100	110	100	90	100
Utah.	M. A. Gill.....	0	...	4.50	...	Fair	100	75	100	100	...
Vt.	J. E. Crane.....	0	...	...	1.25	Slow	85	...	90	85	...
Va.	T. C. Asher.....	0	...	...	...	Slow	85	...	90	85	...
Wash.	W. L. Cox.....	0	...	6.00	...	Fair	90	50	100	90	...
Wash.	G. W. York.....	...	11	6.00	.85	Fair	50	...	...	...	...
Wash.	G. W. B. Saxton.....	20	20	...	1.10	Slow	75	75	...	75	...
W. Va.	T. K. Massie.....	0	...	...	...	...	100	100	90	100	...
W. Va.	W. C. Griffith.....	0	...	...	...	...	100	100	90	100	...
Wis.	N. E. France.....	5	...	...	.80	Fair	75	50	...	100	...
Wis.	F. Hassinger, Jr.....	2	...	...	.85	Slow	100	100	100	95	...
Wis.	H. F. Wilson.....	2	11	...	1.00	Fair	100	75	75	...	...
Wyo.	A. D. Brown.....	30	...	5.25	.90	Slow	75	60	40	110	...





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The new Bingham Bee-Smoker is the most efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

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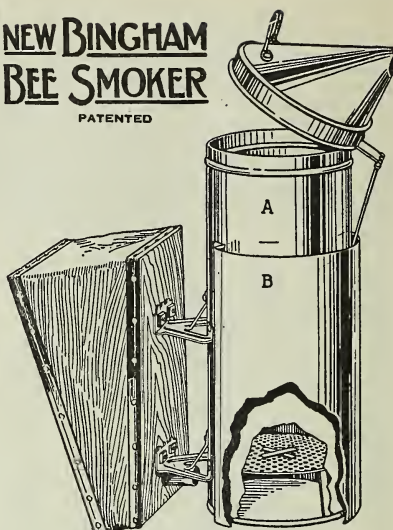
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**A. G. WOODMAN CO.**

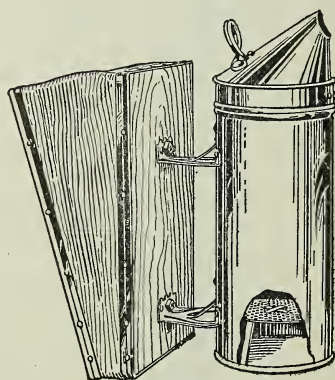
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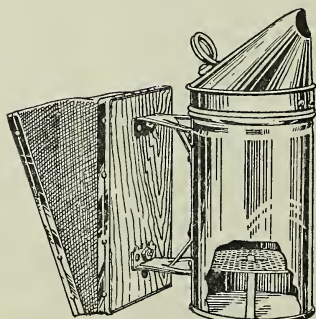
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BEE SMOKER**  
PATENTED



**BIG SMOKE—With Shield**  
Fire Pot, 4 x 10.



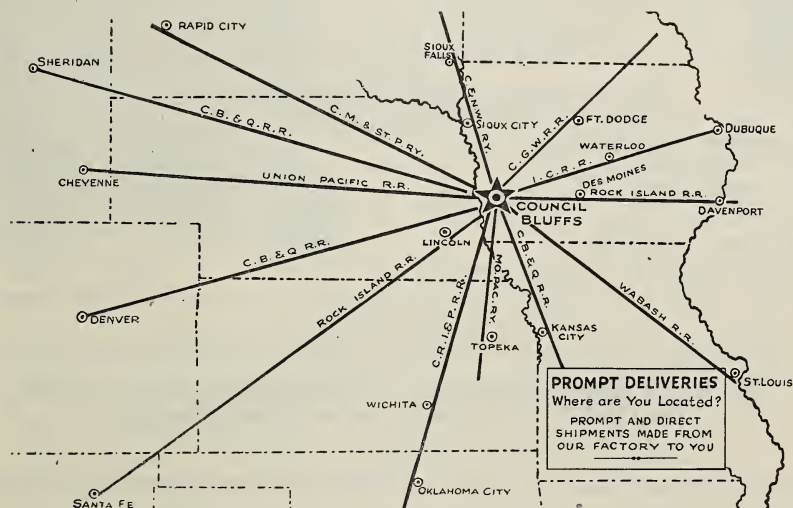
**CONQUEROR.**  
Fire Pot, 3 x 7.



**LITTLE WONDER.**  
Fire Pot, 3 x 5½.



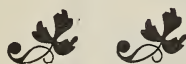
# ARE YOU IN A HURRY?



We can make prompt shipments to you, over any one of twelve lines?

Special attention is given to all orders, to see that they are dispatched at once, over the shortest route, to your station. We plan to save the beekeeper every possible cent in freight hauls, and time in delivery.

We will give your business just such thoughtful and personal attention, in this your rush season.



*The A. I. Root Company of Iowa*  
Council Bluffs, Iowa.

## DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about  $11\frac{1}{4}$  inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

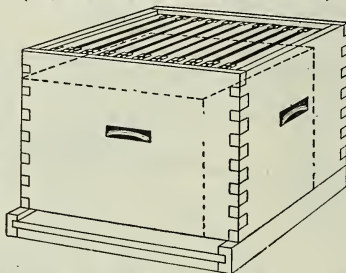
¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the  $1\frac{1}{2}$ -inch spacing from center to center of the frames. This is the real principle to be considered in the

### MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)

Deep frames,  $11\frac{1}{4}$  inches.  
Frame space ventilation,  
swarm control easier,  $6\frac{1}{4}$ -  
inch extracting frames.

Large one-story brood-nest,  
adequate winter stores,  
greater brood-room, stand-  
ard covers, bottoms.



Present equipment may be used as super equipment on Modified Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

**G. B. LEWIS COMPANY, Watertown, Wisconsin.  
DADANT & SONS, Hamilton, Illinois.**

There's a Distributor near you.

## HONEY SECTIONS

Just a reminder that our sections are made from Northern Wisconsin basswood; this makes them **JUST A LITTLE BETTER**. This basswood is all winter-sawed, that's why our sections are **JUST A LITTLE WHITER** and look **JUST A LITTLE BETTER**. We are working overtime to give our customers **JUST A LITTLE BETTER SERVICE**.

We have a full line of hives, supers, hive-bodies, frames, foundation and all other Standard Supplies that are **JUST A LITTLE BETTER**; get our catalog and know why.

**August Lotz Co.**  
BOYD, WISCONSIN.

## Mr. Beekeeper!

The time will soon be at hand when you will need your supplies. Our stock is limited, so we urge you to place your order at once.

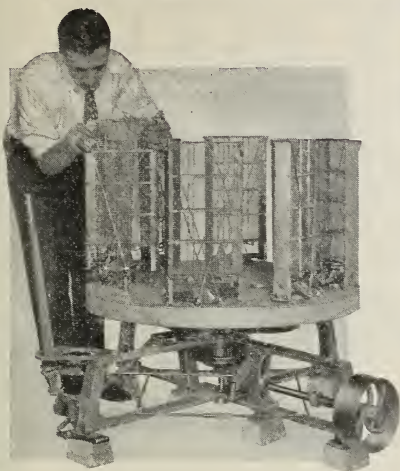
Have you our 1922 catalog? If not, write for one today.



*The A. I. Root Company*  
873 Massachusetts Avenue  
Indianapolis, Ind.



## LEWIS EXTRACTORS



Lewis-Marble Power Honey Extractor-Tank Removed

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and baskets instantly removable for cleaning. A commercial success. Circular free. Address:

**G. B. LEWIS COMPANY,**  
WATERTOWN, WISCONSIN, U. S. A.  
There's a Distributor Near You.

## The May B's R Busy

May B-U-R in need of supplies before the rush begins.

"Never put off 'til tomorrow what can be done today" is a pretty good maxim in the Bee Business.

Order now, when we can give you our best attention.

**BEE PREPARED  
BEE SATISFIED**

**F. A. SALISBURY**  
1631 W. Genesee Street  
SYRACUSE, N. Y.

## Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.



## BARKER

**WEEDER, MULCHER AND CULTIVATOR**  
THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a level, porous, moisture-retaining mulch. Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

**Write Us Today**  
for **FREE Booklet.**

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

**BARKER MFG. CO.**

Box 23

DAVID CITY, NEB.



Barker Mfg Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name .....

Town .....

State..... Box or RFD.....



# ROOT QUALITY QUEENS

## SOMETHING ABOUT THEM.

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has been spared to develop this strain of improved three-banded leather-colored Italians.

## PRICES OF ROOT QUALITY QUEENS.

### April 15 to June 30—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ..	\$2.00 ea.	\$1.80 ea.	\$1.70 ea.	\$1.60 ea.	\$1.50 ea.
Sel. Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Tested .....	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.
Sel. Tested.	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

### July 1 to November 1—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ...	\$1.50 ea.	\$1.40 ea.	\$1.35 ea.	\$1.25 ea.	\$1.15 ea.
Sel. Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
Tested .....	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
Sel. Tested..	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

## PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.

### April 15 to September 1—

C310700—1-pound package..	\$3.00; 25 or more..	\$2.85 ea.
C310800—2-pound package..	5.00; 25 or more..	4.75 ea.
C310801—3-pound package..	7.00; 25 or more..	6.60 ea.

Add price of queen wanted to package price given above.  
Early deliveries will be made from our Alabama apiaries.

**THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.**

## WE ARE PREPARED TO TAKE CARE OF YOUR RUSH ORDERS



Ship thousands of bees all over the U. S. A. and Canada. ¶ Special attention given to small orders. ¶ Queens bred from the best honey-gatherers with all other important points taken into consideration. ¶ Safe arrival guaranteed. ¶ Send for special circular for shipping after May 15th. ¶ Can take care of your rush orders for shipping before May 15, at the following prices:

1-pound package, \$2.25 each; 25 or more, \$2.15 each.
2-pound package, \$3.75 each; 25 or more, \$3.60 each.
3-pound package, \$5.25 each; 25 or more \$5.00 each.
2-frame Nuclei, \$3.75 each; 3-frame Nuclei, \$5.25 each.
2-frame with 1 pound extra bees, \$5.25 each.
1-frame with 2 pounds extra bees, \$5.25 each.

(Add price of queen wanted, when ordering packages.)

**NUECES COUNTY APIARIES, CALLEN, TEXAS**

*E. B. AULT, Proprietor.*

## Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen.....	\$1.25	\$7.00	\$12.50	\$50.00	\$95.00
Tested Italian Queen.....	2.00	11.00			

I have no pound packages or nuclei for sale.

**J. D. HARRAH, Route 1, FREEWATER, OREGON**

*Queens*

*Bees*

# Forehand's 3-Bands

## One Queen for \$1.00

### They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested: 1 to 25, \$1.00 each; 25 to 50, 90c; 50 to 100, 80c each. Select Untested, 1 to 25, \$1.25 each. Tested, \$2.00 each, or 12 for \$20.00.  
One lb. pure Italian bees with queen, \$3.00.  
Two lbs. pure Italian bees with queen, \$5.50  
Ten or more 2-lb. packages, \$5.00 each.

**N. FOREHAND, RAMER, ALABAMA.**



## Package Bees ---AND--- Reliable Queens

### GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen..\$3.00

2-lb. Package with Queen.. 5.00

3-lb. Package with Queen.. 7.00

Tested Queen 1, \$2.50; six..12.00

Untested ....1, 1.25; six.. 7.00

Select Untest. 1, 1.50; six.. 8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed.

Terms, 25% to book orders.

**E. A. SIMMONS**  
GREENVILLE - - - ALABAMA

## ITALIAN BEES AND QUEENS

With two thousand strong, healthy colonies of Italian Bees to draw from, with experienced help and proper equipment we can fill all orders promptly. Write for price list and special prices in car load shipments.

### SAFE DELIVERY AND SAT- ISFACTION GUARANTEED.

	April	May	June
1-fr. nucleus with queen.	\$4.00	\$3.50	\$3.00
2-fr. nucleus with queen.	5.50	5.00	4.50
3-fr. nucleus with queen.	7.00	6.50	6.00
4-fr. nucleus with queen.	8.50	8.25	7.75

### POUND PACKAGES WITHOUT QUEENS

1 pound Italian Bees.....	\$2.50
2 pounds Italian Bees.....	4.00
3 pounds Italian Bees.....	5.75

Add \$1.50 for queen. 20% with order.

**WEBER BROS. HONEY CO.**  
RIALTO, CALIFORNIA

*We Furnish Colonies and Nuclei of*  
**Italian Bees**  
*in Hives and Shipping Boxes.*

**Tested Italian Queens - \$2.00**

**Untested Italian Queens \$1.50**

**6 Untested Ital. Queens \$8.00**

*A full line of Apiarian Sup-  
plies always in stock. Let us  
quote you. Price list on request.*

**I. J. STRINGHAM**  
GLEN COVE, NASSAU  
COUNTY, NEW YORK

*High Quality*  
**Queens, Nuclei  
and Package Bees**  
*At Special Prices*

Untested Queens—1, \$1.00, 6 \$5.50;  
12, \$10.00; 25, \$20.00. Select Untested  
—1, \$1.20; 6, \$6.50; 12, \$12.00; 25,  
\$23.50. Select Tested—\$2.00 each.

2-frame nucleus .....\$3.25

3-frame nucleus ..... 4.50

1-lb. package ..... 2.00

2-lb. package ..... 3.25

3-lb. package ..... 4.50

Add price of queen wanted.

These special prices on queens and bees are good only for delivery on any date you desire after May 15th. Full-est satisfaction guaranteed.

**FRANK BORNHOFFER**  
MT. WASHINGTON, OHIO.



## Strong Nuclei FOR Little Money

Prepaid to your Town or Station Any  
Month of the Year.

From stock originally bred by Henry Alley and E. L. Pratt more prominently known to the beekeepers of 15 years ago as SWARTHMORE.

This stock was bred and selected for upwards of 20 years by the above well-known breeders. Since 1909 I have continued this work of selection. Have 600 colonies to draw from.

1-fr. nuclei with untested queen. \$6.00  
2-fr. nuclei with untested queen. 6.75  
3-fr. nuclei with untested queen. 7.25

DELIVERED FREE in 1st, 2nd, 3rd, 4th and 5th parcel post zone from N. Y. City. Additional charge of 10% beyond that zone.

GUARANTEED SAFE DELIVERY.

NO FOUL BROOD IN PORTO RICO.

TROPICAL APIARIES, Aibonito, Porto Rico  
PENN G. SNYDER.

## THREE-BANDED ITALIAN QUEENS

### WITH PACKAGE BEES AND NUCLEI

All I have for sale are guaranteed to please. Can start your shipments as early as April 20th. Prices for nuclei and packages, furnished with vigorous Italian queens, as follows:

One 2-frame nucleus with untested queen, \$5.00; in dozen lots, \$4.50. One 2-frame nucleus with tested queen, \$5.50; in dozen lots, \$5.00. Two-lb. package hybrid bees with untested queen, \$5.50; twelve, \$5.00; in lots of 25 or more, \$4.75.

Disease of any kind has never been recorded in our county. Health certificate and instructions accompany each package. Satisfaction is guaranteed, and you are to be the judge. 25% deposit books your order, balance due at time of shipment. I have arranged for better railway service by shipping from Clarksville.

Address all orders to  
**BAUGHN STONE**  
CLARKSVILLE, TEXAS.



## Rock-Bottom Prices on Pure Stock Italian Bees and Queens

FOR BEGINNER AND EXTENSIVE  
HONEY PRODUCER.

Satisfaction and safe arrival guaranteed. Packages arriving in bad order replaced to satisfaction of customer on receipt of express bad order bill signed by express agent, said bill to describe condition of shipment. Queens replaced if dead queen returned by return mail in her own cage. My queens are light-colored, large and prolific. Every queen sent out reared by me personally. Pure mating and reasonable satisfaction guaranteed.

### PURE MATING GUARANTEED.

Selected Untested .....	\$1.50 each
Untested. 1 to 11 inclusive....	1.25 each
Untested. 12 to 50 inclusive....	1.15 each
Untested. 50 or more.....	1.00 each

### PRICE OF PACKAGES, F. O. B. Hamburg, La.

2-lb. with comb.....	\$3.50
3-lb. with comb.....	4.50
5-lb. with two combs.....	6.75

Add price of queen wanted to price of package. Certificate of inspection with each shipment.

**J. L. ST. ROMAIN**  
WHITE CLOVER FARM AND APIARY  
HAMBURG, LA.



## Bees & Queens

Mr. Beekeeper: Buy a good queen while you are buying. TRY NORMAN BROS.' pure 3-banded Italian bees and queens. We have the stock, equipment and experience. Our output will be 1000 or more queens per month, our prices are right, our queens are equal to any. Hundreds of America's greatest honey producers order from us. Follow their example. You risk not a penny; after you have given our queens a fair test and you are not satisfied, just return them and we will replace or refund your money. Isn't this a fair proposition to any one that wishes to purchase queens? Our bees are hardy, gentle, prolific, disease-resisting and honey gatherers. Orders filled by return mail or your money refunded.

PRICES—	1	6	12	100
Untested queens	\$1.00	\$5.50	\$10.00	\$72.00
Select Untested..	1.20	6.50	12.00	90.00
Tested queens...	2.00	11.00	21.00	
Select Tested...	2.50	each		
One 2-lb. package bees, \$3.75; 12 or more, \$3.50 each. Add prices of queens wanted. Guarantee pure mating, safe arrival and perfect satisfaction in U. S. A. and Canada.				
NORMAN BROS.' APIARIES. NAFTEL, ALA.				

## I Pay Transportation Charges on Package Bees

1-lb. pkg., including young 3-banded queen \$4.50  
 2-lb. pkg., including young 3-banded queen 6.00  
 3-lb. pkg., including young 3-banded queen 7.50

THREE



BANDED

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

### PRICES OF QUEENS AFTER MAY 15:

1 Select Untested....\$1.00  
 5 Select Untested.... 4.75  
 10 Select Untested.... 8.50  
 25 Select Untested, 75c each

Orders filled by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT, Hayneville, Ala.



## Collier's Bees & Queens

*Breeding Queens Imported from Italy.  
 Three-Banded Italians Only.  
 Shipped When You Want Them.*

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions. Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Untested, one to twenty-five, \$1.00 each; twenty-five to fifty, \$0.90; fifty to one hundred, \$0.80. Select Untested, one to twenty-five, \$1.25. Tested, \$2.00 or \$20.00 per dozen. Select Tested, \$3.00 or \$30.00 per dozen. Pound packages with select untested queens: 1-lb. packages, 1 to 12, \$3.75 each; 12 or more, \$3.50 each. 2-lb. packages, 1 to 12, \$5.00 each; 12 or more, \$4.75 each.

D. E. COLLIER, RAMER, ALABAMA.



## Read What They Say About Our Bees

L. C. and Oscar Mayeux, Hamburg, La.

I must say that your package bees and way of doing business have proven successful. The several hundred packages I bought and sold from you without a single complaint; am sending you more orders.—E. D. Townsend North Star, Mich., June 20, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Gentlemen:—The 50 three-pound packages on frame honey came through in excellent shape. I find them away ahead of combless packages. I received 50 combless packages same day with yours. and yours are doing much better. I regret very much that I did not order the hundred from you.—Ed. Stewart, Port Hope, Mich., June 2, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Gentlemen:—The three-frame nuclei you shipped arrived in excellent shape this a. m. and I wish to thank you for your promptness. Your bees have taken well with my friends; one party wants three three-frame nuclei. Enclosed find check for \$18.00 for same.—Globe Hatchery & Supply Co., Berne, Ind., June 18, 1921.

L. C. and Oscar Mayeux, Hamburg, La.

Dear Sirs:—Your record will show that you have shipped me one two-pound package bees with queen on frame brood and honey last May, and they prove a good buy; they paid for themselves, and made a very nice surplus. The frame brood was a good one and made it very easy to transfer to hive.—O. H. Mills, Forsyth, Montana, May, 1921.

### *Nuclei and Packages*

In order to increase and better our shipping facilities, we found it necessary to combine our business. We are now offering the following: Two pounds bees one Root frame brood and honey, \$3.75 each. Two-frame nuclei frames emerging bees with about one pound bees, \$3.50. Three frames same as above, \$4.35. Untested three-banded queen for above packages only, \$1.00 each. Our last advertisement for this season. Shipment May 15th to June 15th, ship by express only, guarantee safe arrival and health certificate.

**L. C. & OSCAR MAYEUX, HAMBURG, LA., Lock Box 15.**

## Superior Italian Bees and Queens

On account of being booked for three-fourths of our capacity we have been returning orders, as we make it a practice not to book for more than three-fourths of our capacity; then if we have bad weather, we can make deliveries on time. If we have reasonably good weather we will be able to supply another thousand packages in May. If your order is booked for more than prices below, you will get the benefit of these prices.

### *Package Bees and Nuclei, with Queen*

1-pound package, \$3.50; 10 or more, \$3.00

2-pound package, 5.00; 10 or more, 4.35

3-pound package, 6.50; 10 or more, 5.85

Same price on one, two and three frame nuclei respectively.

Untested Queens to June 15....One, \$1.25; 10 or more, \$1.00 each

Untested Queens after June 15..One, \$1.00; 10 or more, \$0.75 each

Tested Queens to June 15.....One, \$2.00; 10 or more, \$1.75 each

Tested Queens after June 15....One, \$1.75; 10 or more, \$1.50 each

Safe arrival and satisfaction guaranteed.

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

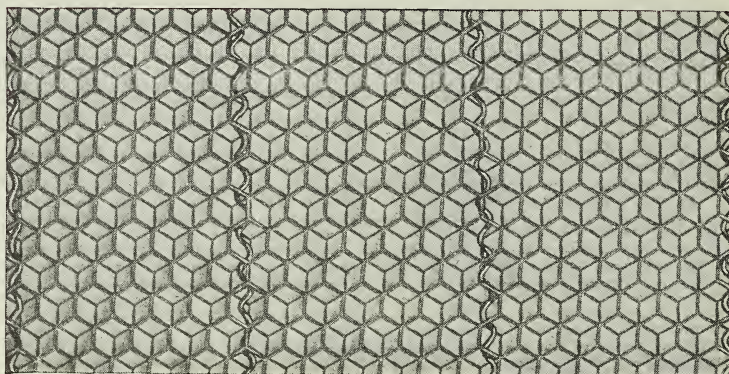
# EPOCH MAKING!

## DADANT'S

Makes  
non-sag  
comb.

### WIRED

Cuts out  
cost and  
labor of  
wiring and  
imbedding.



Quickly  
accepted  
by bees.

### NON-SAG

The  
finished  
comb a  
delight to  
the eye.

## FOUNDATION

*Tested by time and use*

Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists.

**WHERE WIRED FOUNDATION HAS BEEN TESTED FOR OVER TWO YEARS.**

Each dot  
represents  
an apiary  
of from  
100 to  
2,000  
colonies,  
an average  
of over 400  
colonies.



The total  
colonies  
in the  
apiaries  
represent-  
ed is over  
15,000.

### THIS IS A REAL TEST.

Dadant's Wired Foundation, therefore, is not alone a Dadant product, but it is the final perfection of a needed improvement to which many beekeepers in all parts of the United States have contributed. The map shows the location of many of the biggest beekeepers in the country who have tested the foundation in their own apiaries, guided its development over a long period and who have finally given it their unqualified support.

**Costs No More.** Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of 8c per pound above the catalog prices of old-style foundation is thus immediately and fully returned to the beekeeper.

**Ask for Samples.** A small mailing sample sent free on request. Wired Foundation may be used in new style split bottom-bar frames or in the one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

A sample of 7 sheets, for either style frame, will be sent, postpaid, to any address in the United States for \$1.00. Specify size desired.

## DADANT & SONS, HAMILTON, ILLINOIS

Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking.



# EDITORIAL

HAVING learned through items published in the newspapers that the Bureau of Chem-



**To Make Thick  
Syrup That Will  
Not Granulate.  
No Acid Needed.**

istry of the U. S. Department of Agriculture is working on the problem of making heavier cane syrup

and maple syrup so treated that they will not granulate, the Editor recently visited the sugar laboratory of the Bureau of Chemistry at Washington, to learn how this process can be applied to the preparation of syrup for fall feeding of bees. Some of the things learned through this visit may prove to be of great importance to beekeepers in the North who are seeking a perfect winter food for the bees.

By adding a substance called invertase, which is now being manufactured commercially, the Bureau of Chemistry has discovered that it is possible to make a sugar syrup as thick as honey that will stand indefinitely without granulation. The action of this material on the sugar syrup in changing the cane sugar (sucrose) into levulose and dextrose is similar to that which takes place when tartaric acid is added and heat applied; but the amount of material used and the nature of the substance are such that its use in making winter feed can not be objectionable.

But the great advantage of this method of partially inverting the cane sugar is that the inversion can be carried to the desired extent and then stopped completely by heating. As explained by H. S. Paine, who is in charge of this work, when the inversion is not carried far enough, the sucrose will crystallize out; and when the inversion is carried too far, the dextrose will crystallize out just as it does in honey in which inversion is practically complete. When the inversion is carried to a certain point and then stopped by reheating the syrup to destroy the invertase, there is a balance between the different kinds of sugar which prevents crystallization. It is therefore possible to make a thick sugar syrup which will stand without crystallization for long periods, whereas either ordinary sugar syrup or honey will sooner or later granulate. After the completion of certain experiments here, further reports will be published in these columns regarding this new process.



LAST month we reported the action taken at the meeting called at Washington on March 9



**U. S. Post Office De-  
partment Prohibits  
Importation of Bees  
Through Mails.**

by Dr. S. B. Fracker, acting as chairman of the committee appointed at the

Toronto meeting of the American Associa-

tion of Economic Entomologists, to devise means for the protection of the United States and Canada against the introduction of the Isle of Wight disease. As a result of this action the Post Office Department issued an order, on March 21, prohibiting the importation of honeybees through the mails from all foreign countries except Canada.

To prevent bees being sent into this country through other channels, a bill has been drafted to make it unlawful for any person to import or offer for entry into the United States any honeybees, except for experimental or scientific purposes by the United States Department of Agriculture. Provision is made by which the Secretary of Agriculture and the Secretary of the Treasury may make regulations admitting honeybees from countries where no dangerous bee diseases exist. Not only has the Isle of Wight disease been found in the French Alps, as reported in this journal last month, but it has recently been found to exist in Switzerland. It certainly now appears that it is high time to stop all importation of bees and queens from Europe if this disease is to be kept out of the United States and Canada; for, as was demonstrated last summer when bees containing some of the living mites which cause the diseases were received at the Bureau of Entomology at Washington, the mites could easily be introduced by the importation of queens and their attendants.

Australia has already prohibited further importations of bees from the United Kingdom and will, no doubt, now prohibit such importations from other countries as well.

Those who desire further information on the Isle of Wight disease should write to the Bureau of Entomology, Washington, D. C., asking for Department Circular 218.

LATER. Just as we go to press we learn that the bill to prohibit all importation of bees except under government supervision is to be introduced in the Senate immediately. Beekeepers should write to their Senators and Representatives at once asking them to support this bill.



THE article on Brood Disease Variation by A. P. Sturtevant, specialist in the Bacteri-



**Confusing Symptoms  
of the Brood  
Diseases Explained.**

ology of Bee Diseases, Bureau of Entomology, U. S. Department

of Agriculture, published in this issue, should clear up many of the puzzling questions which have been troubling those who are struggling with both American foul brood and European foul brood. This article explains why the appearance of larvae dead from European foul brood varies so

greatly, and why in American foul brood the symptoms are so constant and uniform; why in typical European foul brood the larvae die before the cells are capped, while in American foul brood most of them die after the cells are capped, as well as the reasons for the exceptions to this which sometimes cause so much confusion. Those who have both these brood diseases in their locality should study this article carefully, for, by doing so, they should be able to distinguish between the diseases even when the symptoms are confusing.



AN EXCELLENT plan for reducing or preventing swarming when using the standard Langstroth



**Management Previous to the Honey Flow to Prevent Swarming.**

hive in extracted-honey production is one

that is usually not even recognized as a swarm-control measure because it is so intimately connected with the building-up of the colony previous to the honey flow. This plan, so far as the Editor knows, was first suggested by E. E. Coveyou and described in this journal in 1908 (pages 640 and 641) by E. D. Townsend, as follows:

E. E. Coveyou of Petoskey, Mich., has a very good plan for handling his bees during the fore part of the honey flow. He uses ten-frame hives, and before the honey flow he gives the colonies another story of combs without putting an excluder between. The cells of these combs should be of the worker size, for the queen is allowed full sway through this story until the colony needs a third one. At the time this third story is given, the queen is placed below in the first story, a queen-excluder is put on, and then the third story of empty combs put over it. Finally, on top of all, the second story partly full of honey and brood is added. This plan has the advantage of giving the colony an abundance of comb room and also an unlimited amount of breeding space for the queen during the critical swarming period previous to the honey flow.

When the bees are wintered in a single story, the second story should be given a little before the combs in the lower story are completely filled with brood, honey and pollen, and at least several of the combs in the second story should be old dark brood-combs to attract the queen above promptly. Since in the North this second story should be given about the first of May (sometimes even the latter part of April in well-wintered colonies) the hives, if packed, should be left in the packing cases and the packing material replaced around the upper story. If enough early honey is stored in the upper story to crowd the queen there (which often happens with strong, well-wintered colonies in the spring even when weak ones in the same apiary are starving), a third story of empty combs should be given even though the main honey flow is still several weeks in the future. To save trouble when putting the queen down later, it is well to put the queen-excluder over the second story to keep the queen out of the third story. When strong colonies are managed in this way the

queen usually abandons the lower story soon after the second story is given, but carries on her work of filling the second story with apparently increased vigor.

After the queen has been above so long that most of the brood left in the lower story has emerged, she should be put down. This will usually be about three weeks after the second story was given if the queen went up promptly when the second story was given. To put the queen below, the Editor prefers setting off the second story and hunting out the queen, and she is then simply picked up and transferred to the lower story. Some good beekeepers prefer to shake the bees from the combs of the second story, to be sure that the queen is put below, instead of finding her.

Strange as it may seem, putting the queen back into the lower story and confining her there by means of the queen-excluder is a swarm-control measure of great importance, just as inviting her into the second story was a few weeks previously. At first thought one might expect that limiting the queen to a single story should increase the tendency to swarm. To have confined the queen to the lower story earlier in the season without having permitted her to go into the second story would result in swarming in many cases, but conditions now are quite different.

The bees are now compelled to establish their brood-nest anew in the lower story, which at this time contains but a little brood. This brood is rapidly emerging, and the colony behaves much like a newly hived swarm. There is usually considerable pollen stored in the lower set of combs, which probably retards the work of the queen to some extent; but, where the honey flow is short, this is often an advantage. The conditions are as though an artificial swarm had been made, the swarm being in the lower story, below the supers and the parent colony above the supers, but all the bees are in the same hive.

Nine or ten days after the brood was put up and the queen put down, all queen-cells built in the top story not needed in nuclei may be destroyed and this former brood-chamber left on the hive as a super. It is not always necessary to destroy these queen-cells if this brood-chamber now on top is separated from the lower brood-chamber by at least two standard-depth supers. The emergence of young queens in the top story usually causes no trouble. By pushing one of the upper stories forward far enough to form an opening at the back the drones can escape from the hive, and a young queen may be permitted to go forth to mate through this opening. Unfortunately, this plan does not always prevent all swarming. Where the honey flow is long enough and especially in the North, some colonies managed as described above will prepare to swarm after the queen has again filled the brood-chamber to which she is now confined. Since at this time it is not feasible again to let her go into another set of empty combs



added above as was done earlier, some beekeepers take away all the combs of brood or all but one, filling out the brood-chamber with empty combs or frames of foundation and again placing the removed combs of brood above the supers, thus compelling the bees again to establish a new brood-nest in the lower story, confining the queen there as before by means of the queen-excluder.

During ordinary seasons instead of doing this, any colonies that persist in building swarming cells, after having been given every chance to behave themselves, may as well have the queen killed and all queen-cells destroyed; then, after eight to ten days, a young laying queen may be introduced after again destroying all queen-cells. This settles swarming for the remainder of the season and possibly reduces the tendency to swarm the next year, provided the young queen given is reared from stock that is less inclined to swarm.



NO ONE has even been able to say with half enough emphasis how important it is to see



**Shortage of Stores  
in Spring Still Takes  
Great Toll from  
American Beekeepers.**

are abundantly supplied with stores during the heavy

brood-rearing period of spring. In spite of all that has been written on this subject and said at beekeepers' meetings, the lack of abundant stores during this critical time takes an annual toll from beekeepers in this country that would stagger the imagination if the figures could be known.

Reports coming to the Editor's desk from widely scattered regions indicate that colonies are already dangerously short of stores in certain regions, and in some cases many colonies have actually starved. A glance at the tabulated figures from producers on our market pages reveals this condition, since this month one column of these figures indicates the condition of the colonies as to the amount of stores.

Of course, no beekeeper worthy of the name will permit his bees to starve now; but merely to prevent starvation is by no means enough, for before starvation becomes imminent the colonies may be ruined, so far as being ready for the honey flow is concerned, by curtailing brood-rearing. Even extensive beekeepers too often make the serious mistake of permitting the stores to run too low for safety during the period of heaviest brood-rearing which, in the North, should take place this month.

The old way to carry the bees through the building-up period of spring was to feed them daily about a half pint of syrup, made of equal parts of sugar and water, to stimulate brood-rearing. Today we know that such a meager supply can not alone produce the kind of colonies needed to give good yields. For real safety at this time

each colony should have not less than 10 to 15 pounds of stores in the combs every minute of the time that they are not securing from the fields sufficient nectar for their increasing daily needs. If the bees do not have this reserve of stores, it should be given immediately, even though the days are cold or rainy and the bees disagreeable to handle. If frames of honey are not at hand sugar syrup should be fed. It is not necessary in the North to feed a little each day to keep up brood-rearing at this season, but 10 or 20 pounds of syrup can be given at a single dose. The friction-top pails having perforations through the cover make splendid feeders for this purpose. The pail filled with warm syrup can be inverted over the escape hole in the bee-escape board used as an inner cover. The packing should be replaced snugly around the feeders. To perforate the covers of the friction-top pails, Harry Beaver of Troy, Pa., drives several small nails through a block of hard wood and then uses this block to punch several holes at a time. Usually, every pound of honey that is given to needy colonies during the six weeks just preceding the main honey flow, is returned by the bees tenfold or more in the increased yield if the locality is at all good.

One of the most dangerous practices is that of putting off from day to day the giving of more stores or the examination of the colonies, hoping each day that the next will be more suitable for handling the bees. Too often this results in waiting too long, the damage being done before the beekeeper realizes the seriousness of the situation.

Many who compel their bees to live from hand to mouth when they should be rearing brood most extensively are the very ones who complain most bitterly about the low price of honey and the high cost of production, failing to see that the simplest way to make these troubles vanish is to increase their yield per colony by giving the bees an abundance of stores when the workers for the harvest are being reared. In many cases the yield is more than doubled when this is done.

In the North it often happens that the period of greatest danger comes late in May, sometimes just before the main honey flow. Fortunately, colonies that are really strong enough in the spring to send a large force of bees to the field often gain in stores, while weaker colonies in the same apiary are starving, because the former are able to take advantage of every minute of favorable weather during the spring; but, of course, these splendid colonies are the ones that suffer the most if the stores finally run too low.

The beekeepers who give their bees a superabundance of stores the previous fall for both their winter and spring needs are usually the ones who are reaping the greatest rewards in honey. It seems to have taken some of us a long time to learn this.

OUR success is measured by the amount of brains that go into our business. Whatever we amount to as beekeepers is dependent upon the manner in which

we apply our mental faculties to our work. As producers our chief aim is to get more and more honey, and one of our big problems is the improvement of stock. Others that engage in the live stock industry have benefited more through the application of the principles of scientific breeding than have we as beekeepers. The reason for this is quite apparent, for we have direct control over the female parent only. If we were only in the position where we could speak of drone-rearing as we do of queen-rearing, then, indeed, we would be able to make rapid strides. The most we can do at the present time is to assist nature in her methods of perpetuating the honeybee.

#### Selecting a Breeder.

In breeding better bees we always turn our efforts (1) to the *fixity of type* of the race of bees which we wish to better. In selection we must first of all purify the ancestry so that the inheritance thereof should become more and more similar as we proceed. Thus, in the selection of a queen it is necessary that she, and to a greater extent her offspring, conform to the type of the race of which she is a representative (the nearer she is to the upper limits of such, the better).

After fixity of type comes (2) *utility* or the honey-gathering powers of the offspring of the breeding queen. It is impossible for the queen-breeder to set a certain standard for the amount of honey stored. For instance one cannot place, say, 200 pounds of surplus honey as a requirement for a breeding colony on account of the variability of the seasons. We can make use of comparative results, however, and by means of careful selection from year to year choose from among the best surplus storers our breeding queens. In this manner advancement is brought about in standard yards by breeding from the very few exceptional colonies.

Prolificness, or (3) *fertility*, is the next selective point. It should be borne in mind that in selecting for utility the queen-breeder should not go against fertility, and also that a breeding queen may be inconspicuous as such, but may contribute much to her offspring.

The other main point is (4) *vigor*. Hardiness in bees means their power to resist adverse conditions such as severe winters and the like. There are two minor points in selection; the one, the non-swarmling tendency and the other, that of quiet temperament. In comb-honey production white cappers and non-propolizers are selective factors. The

## BREEDING AND REQUEENING

### *Are Further Importations Necessary to Improve Our Stock? Shall We Requeen Each Year?*

By M. C. Richter

clever, you will not, of course, give all your strong colonies so many frames of foundation to draw out; but on the contrary would soon find that, through selection, some 10% or 15% of your colonies are very fine wax-secreters (as much so as swarms), and that it would be more profitable to let such colonies at least start, if not complete, all your foundation into comb. In like manner, the most suitable colonies for comb-honey production may be selected. Bees kept for the purpose of pollination are selected for fertility and vigor and possible for tongue length.

#### Foreign Stock.

It must be seen from the above that material progress can be made in the breeding of bees through careful, painstaking selection over a period of years. We have experimented with most of the economic races of honeybees and, although these races have different characteristics which might fit into the environment of various beekeeping regions, in California at least, we have reason to favor the leather-colored Italian. In view of the fact that importations of queens into this country may bring about the introduction of the mite which causes the devastating Isle of Wight disease, the question has been advanced, "Would it not be better, for the present at least, to restrict the importation of queens into the United States?"

For three years the writer kept bees commercially in Chile. The Italian bee had been imported into that country 70 years before. Owing to the crude methods of beekeeping prevalent throughout the country, nature did her own selection. The hive (Fig. 1) of the country was small (13 x 13 x 6 inches). We bred from the best stock in Chile and bred also from the best stock we could import from the United States, and we must confess that we could see no difference in results between the two strains over a period of two years. The inhabitants of the hives in Figure 2 were the very bees that came from the Chilean type of hive in Figure 1. From an equivalent of about six Langstroth frames of brood in the latter, most of the queens were able to maintain, when given a chance, 10 to 15 frames of brood in our standard hives. Owing to the above and to the fact that there were no brood diseases in Chile, a bill was put before the Chilean Congress to prohibit the introduction of bees into the country.

The fixity of type of the Italian race is

pound-package man lays special stress upon fertility, and the queen-breeder selects cell-builders. If, perchance, you are in need of drawn comb and are



established in this country. In an excellent article in the "Bee World" for November, 1921, Arthur M. Sturges states: "After dealing with a considerable number, both of imported American queens and daughters of these, the evidence shows that they build up in the spring with greater rapidity than do the Italian strains from Italy direct."

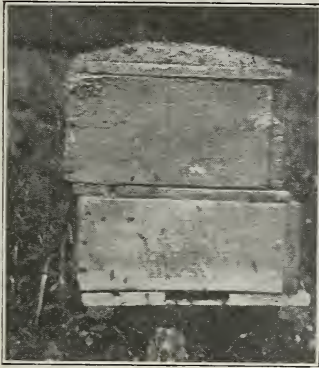


Fig. 1.—Chilian hives, 13 x 13 x 6 inches. The struggle for existence in such small hives tends to increase the vigor of the race.

It is the writer's opinion in view of the above and of what he has done along the lines of selection in South America and California that further importations are unnecessary at the present time.

#### Reasons for Requeening.

We requeen in order to maintain purity of race, replacing (1) mismated queens. The writer cannot see the wisdom of this practice in commercial honey production. Through actual experimental work completed at the University of California over a period of two years and conducted among several hundred colonies, it was found that the progeny of an Italian queen mated to a black drone always stored more honey than

either the pure Italian or black race. Since that time we have found the same to hold true in our yards. In fact we are pleased when our Italians mismate—pleased at the big crops and are now quite callous to the few extra stings that have been thrown in.

Another common cause for requeening is (2) inferiority—the colony was not up to the average. Better to do the dequeening when scattered brood is first noticed, even if the queen be only two or three months old, than to wait till the season is over before discovering her uselessness. The big question in requeening, however, associates itself with (3) failing queens. The orthodox way is to requeen every year. At all events this subject permits of discussion, as the large majority of California beekeepers do not requeen every year. The longevity of the queen is dependent upon her inherent qualities and upon the amount of work which she performs. In tropical and semi-tropical countries queens wear out fast. Parts of California are semi-tropical and many of our regions have periods of long brood-rearing. In the great valleys of the state there is active brood-rearing for nine to ten months of the year. In other parts of the state there is but half this amount of brood-rearing. Where there are long seasons and when migratory beekeeping is engaged in, it pays to requeen every year. Requeening is unquestionably better than waiting for supersedure. But when the season is short and fast with only one main flow during spring, how about it? Let it be understood that the queen must reach her peak at the proper time and that she must be responsible for her quota of young bees reared during September or October. Supposing a queen is raised just after the peak has been reached this year, will she be able to produce in May, 1924, her 75,000 or 100,000 workers? For several years we thought our queens would do it—many of them will. We have found that the extra cost of annual



Fig. 2.—Stock taken from small hives like those in Fig. 1. Hundreds of colonies to work with are a great help in studying the principles of breeding.

requeneering is more than taken care of in an increase of the crop. One drawback is that we are never sure that the replaced queen is going to be as good as the one removed—often she is not. It pays, however, under all conditions to requeen every year. And it pays likewise to requeen with Italian stock colonies affected with European foul brood. Requeening is in order for severe cases of sacbrood and for the so-called paralysis.

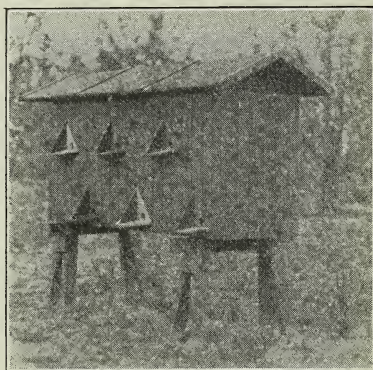
#### Requeening Time.

Aside from requeening for mismated and inferior queens, and on account of diseases, which practice may occur at any time during the year, we hear the question, "What is the best time for the commercial beekeeper to do his general requeening?" The factors under consideration are to prepare colonies for the (1) main flow, (2) one or more secondary flows, (3) winter, or to requeen at a (4) time when the beekeepers can spare their precious moments to the best advantage. There is another consideration, however, that outweighs the above factors. Requeening is not synonymous with queen-rearing. The best time to raise queens is during spring brood-rearing. Optimum conditions prevail at that time. Springtime is the natural breeding season, and the finest specimens of males and females are developed under their most favorable environment.

#### Simplest Requeening Method.

We requeen our colonies as the main flow tapers off in June. It is useless to take up valuable space in a description thereof, for

our method was partly described in the current February issue, and is much more fully and efficiently handled in an editorial in "Gleanings" for May, 1921. One word though; we certainly do like queens raised naturally in their own homes, and nobody appreciates more than we do, the great sav-



European mating nuclei—a method of conserving warmth. This so-called nucleus house is built for 12 nuclei.

ing of time which this method makes possible.

Queens perform best when reared in normal colonies in spring. Avoid the queenless impulse and leave the bees alone when the honey plants are on a strike.

Big Sur, Calif..



THE diagnosis of the brood diseases of bees, particularly without the aid of the microscope, cannot be carried out by the use of any definite rule. If the symptoms never varied from those typical ones pictured and described so often in the various papers on bee diseases, then some of the sources of confusion to the average beekeeper in diagnosing brood diseases could be eliminated to a large extent. Unfortunately, with the varying conditions under which the brood diseases are found present or thriving, the symptoms differ accordingly. These variations, when encountered, may lead the beekeeper to erroneous conclusions and consequent losses unless he gives the matter careful study.

It is not the purpose of this paper to take up the entire subject of a comparative study of all the symptoms of the brood diseases of bees. This has been covered more or less completely in various bulletins of the

## BROOD DISEASE VARIATIONS

### *Explanation for Some of the Confusing Symptoms in the Gross Diagnosis of Bee Diseases*

By A. P. Sturtevant

understood or unrecognized by the average beekeeper. A more complete description may prevent mistakes being made in gross diagnosis.

There are many external influences affecting the progress of the diseases which may have more or less direct bearing on these variations in symptoms. The actual changes in appearance of the diseased larvae are caused by certain bacteria. Since some of these confusing conditions are easily explained by the action of the bacteria associated with the disease in question, only this side of the subject will be considered at this time.

#### The Nature of Bacteria and Some of Their Functions.

A short digression is here necessary in order to understand the nature of these bac-

Department of Agriculture and elsewhere. No further references to specific literature will be made. There are, however, a few confusing variations, often mis-



teria which cause so much confusion. Bacteria are extremely small micro-organisms, the smallest members of the plant kingdom. They are simple, single-celled plants which grow and increase in numbers by continually dividing in two. This often takes place rapidly under proper conditions of food supply and temperature. Certain pathogenic or disease-producing bacteria are known to be the cause of various diseases of plants and animals. These attack only living tissues, as a rule. Others known as putrefactive or decomposing organisms have only the power of decomposing plant or animal tissues after death has occurred, acting like scavengers, breaking down and destroying the dead tissues.

Some bacteria have the power of forming what are known as spores. These are formed when conditions develop unfavorable for growth, the purpose being to carry the organism thru this unfavorable period until it can find again the proper growth conditions. The spores have thick walls which enable them to resist long drying or high temperatures and to pass thru long periods without food. When spores at any time are placed where food and other conditions are again favorable for growth, they germinate and become active once more, in something the same way that seeds sprout on planting.

There is another type of bacteria which never forms resting-stage spores. They always occur only in what is known as the vegetative or actively growing stage. These are like already growing plants that may be transplanted to another spot. When conditions become unfavorable for the growth of non-sporeforming bacteria they gradually die off. In the case of bee diseases we have to deal with all these various types of bacteria.

#### The Cause of European Foul Brood.

European foul brood will be considered first, since it responds more freely to external influences affecting the disease. It is also the worst offender regarding variations in symptoms. The appearance of the symptoms varies to such an extent at times as to cause confusion while, as will be seen later, American foul brood is much more constant in the manifestation of its symptoms. The explanation lies in the fact that in the case of European foul brood there are associated with the bacteria causing the disease several varying types of organisms, while in American foul brood there is but one organism active, as will be described later.

As is well known a specific organism, *Bacillus pluton*, is the cause of European foul brood. The organism is presumably fed to the young coiled larvae in their food, primarily from some outside source. It at once starts to grow in the larval intestine, increasing quite rapidly in numbers. This rapid start or short incubation period is possible because *Bacillus pluton* is always in its active growing or vegetative stage. It does

not form spores, and consequently is ready to attack at once without the lapse of time necessary for spore germination. As the disease develops and the bacteria causing the disease increase in numbers, they give off toxins which are absorbed by the larva and eventually cause its death.

#### Relation of Secondary Invaders to Confusing Symptoms.

There are found associated with *Bacillus pluton* other varying organisms known as secondary invaders. They never cause the death of the larva, which distinguishes them from the primary pathogenic organism. They are either present in small numbers or get into the larva soon after death and start to develop in the dead larva. In the early stages of the disease both in the larva and even in the colony as a whole, the secondary invaders generally have little effect on the appearance of the symptoms. Most of these do not have the power of decomposing animal tissues to any extent. *Bacillus pluton*, with other not actively putrefactive organisms, predominates in numbers and until after the death of the larva occurs is found only inside the larval intestine. When external conditions are such that the disease is allowed to run unchecked for some time, then other secondary invaders developing more rapidly come into prominence, and organisms with purely putrefactive or decomposing functions begin to invade the entire body tissues of the larva. Therefore it has been found that, as the secondary invaders vary in character and prominence, so the symptoms vary from the characteristic appearances.

#### Relation of *Bacillus Alvei* to Abnormal Appearances.

The most active and pernicious of the comparatively large numbers of secondary invaders in European foul brood is *Bacillus alvei*. In the early days of the study of the bacteriology of bee diseases it was thought to be a pathogenic organism, as it was so often found present in large numbers in the dead larvae. This has since been proven not to be the case, for it is now known that *Bacillus alvei* does not cause the death of larvae. *Bacillus alvei* belongs to the group of spore-forming bacteria, and practically its only function, connected with European foul brood carried out under the proper conditions for its activity, is to decompose the dead remains. As a result of this putrefactive activity when present, changes in the appearance of the remains occur to such an extent as often to lead to much confusion. This condition occurs most abundantly where European foul brood is allowed to run unchecked for some time and particularly in regions where the disease is always bad.

In such cases as mentioned above it is noticed that more and more of the larvae seem to be affected shortly after being sealed, at the time when they are still changing position in the cells from coiled to extended. Death generally occurs while they are still

moving about in the cells, which accounts for the irregular positions of the dead larvae in these cases. Large numbers of the vegetative rods and spores of *Bacillus alvei* are found in larvae dying at this age. Under these conditions the irregular positions, shapes and colors of the dead larvae all vary more or less from the characteristic features of the dead coiled larvae in typical European foul brood (Fig. 1). They have a dark-brown color and a granular, lumpy, stringiness or old, dried rubber consistency. These cause the confusion sometimes experienced by beekeepers in differentiating between the diseases.

Furthermore, there is a characteristic odor associated with this condition which is caused by the putrefactive activities of *Bacillus alvei*. The odor is never found associated with any other condition or brood-disease organism. It has been described as similar to that of putrid, decaying meat. It is markedly different from the typical American foul brood and is much more disagreeably persistent. The activity of *Bacillus alvei* also, without doubt, causes the rather granular, lumpy, stringy consistency sometimes encountered and mistaken for the typical glue-like roping of American foul brood. The dried-down scale from this type of dead larva in European foul brood is easily removed from the cell walls (Fig. 1 n). The brittle American foul brood scale adheres tenaciously to the lower side wall in practically all cases (Fig. 2). This latter feature of American foul brood is a result of the glue-like consistency of the decomposition products from the action of *Bacillus larvae* on the tissues of the larva.

The occasional similarity between European foul brood and American foul brood when *Bacillus alvei* is abundant can be explained by the fact that the non-pathogenic *Bacillus alvei* and the pathogenic *Bacillus larvae*, the cause of American foul brood, are "cousins." They belong to the same general family of bacteria, and therefore have somewhat similar characteristics of action regarding putrefactive functions. The two organisms are quite different, however, in that *Bacillus alvei* has putrefactive functions alone while *Bacillus larvae* combines the power of primarily producing disease with the ability to decompose the remains.

The important fact in the above discussion is, as will be seen later, that the primary activities of *Bacillus pluton* do not prevent the growth of secondary invading organisms which cause most of the variations and so-called abnormalities in the symptoms of European foul brood.

#### Uniform Symptoms in American Foul Brood.

It may be well to turn now to American foul brood for comparison. Fortunately the problem in this disease is much more simple. The symptoms in American foul brood nearly always are found to be uniform in character. Every diseased cell contains a dead larva or scale, all having practically

the same appearance as to consistency, color and position in the cell. This is true even under varied external conditions (Fig. 2).

The reason for the uniformity of symptoms in this disease, in comparison with the great variations sometimes found in European foul brood, is explained by the fact that in American foul brood there is found practically never another micro-organism associated with the disease. This is *Bacillus larvae*, the cause of the disease. This pathogenic, spore-forming organism not only kills the larva but carries out the de-

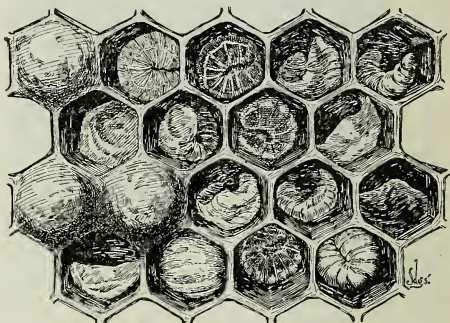


Fig. 1.—European foul brood. a, j, k, normal sealed cells; r, normal coiled larva at age at which a majority are attacked by the disease; b, p, first indications of disease, uneasy movements, a light discoloration and prominence of the tracheae, or turning in cell with back out showing grayish yellow line of intestine; f, h, m, q, various stages of disease in coiled larvae, moist, melting, cream-colored, to partly dried cheesy, light-brown coffee color; c, characteristic yellow-brown, coiled scale showing tracheae; d, e, g, i, l, o, irregularly coiled and partially extended larvae, darker-brown, moist, cheesy with sometimes a tendency to coarse, lumpy, stringing accompanied often by a strong, putrid, decaying-meat odor; n, partially dried-down scale irregularly extended on lower side wall or along the side walls in a corkscrew-like position. These are darker-gray brown, rarely adhere to the cell walls to any extent, having the consistency of old rotten rubber and always the putrid decaying-meat odor. These are often found under perforated or discolored cappings, not shown here.

composition of the remains. Furthermore, and this is an important factor in the reasoning, the products of growth and decomposition apparently prevent the growth of any other organisms. This condition causes the vegetative rods soon to form the resistant resting-stage spores. There are no secondary invaders in American foul brood, and what few variations are seen are due to differences in the age of the larva at the time of death.

#### Reason for Delayed Death in American Foul Brood.

*Bacillus larvae* gains entrance to the larva generally in the spore stage, in the larval food. This occurs at about the same stage as in European foul brood, while the larva is still coiled in the cell. Only rarely, however, do coiled larvae die. This is apparently because it takes some time for the resting-stage spores to germinate into the



active vegetative rods. This causes death, as a rule, to occur later in the life history of the larva. Therefore the diseased larva is found almost always to have been sealed over before death occurred, having finished spinning its cocoon and taken the flat extended position preparatory to pupation.

In bad or virulent cases, however, it has been noted that occasionally some coiled larvae do die before extending in the cells. These often have somewhat the appearance of typical coiled European foul brood larvae. The reason for this is that these coiled larvae incidentally have been fed some active vegetative rods instead of the slowly germinating spores. Therefore, the rods are able to start activities at once and thereby

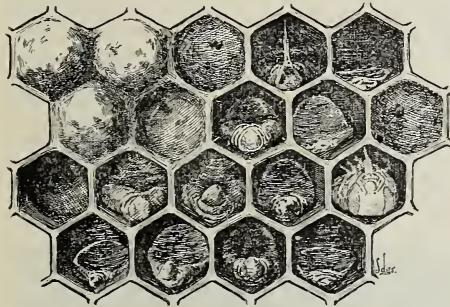


Fig. 2.—American foul brood. a, b, f, normal sealed cells; c, j, sunken cappings showing perforations; g, sunken capping not perforated, often showing glistening brown surface of cocoon pressed inwards by capping; h, l, m, n, q, r, larvae affected by the disease in various stages of decomposition and drying down. Note that all lie uniformly extended in practically the same position along lower side wall of cell; e, i, p, s, gummy or brittle scales formed from dried-down larvae; the anterior end may be broken off occasionally and removed, but posterior end curved up into the bottom of the cell remains glued fast; o, pupa showing form of adult bee affected by the disease, in first stages of decomposition; d, dried-down pupa with tongue extended, remaining attached to top wall of the cell like a fine thread.

cause the death of the larva much sooner. Under the microscope the diseased coiled larvae always show considerable numbers of the vegetative rod forms and few if any of the spores.

The last-described manifestation is about the only confusing variation in the symptoms of American foul brood which might be misleading to the beekeeper. The coiled position and yellowish-brown color might suggest European foul brood, but upon closer examination the consistency is found to be quite different. It is slimy, with a tendency to rope like the typical American foul brood larva, instead of having the characteristic moist, melting, cheesy consistency of coiled European foul brood. This variation is a more or less rare occurrence and should cause no trouble in the gross diagnosis of American foul brood, since the combs will be well filled with the typical forms of the disease.

### A Never Failing Positive Symptom of American Foul Brood.

There is one symptom in American foul brood upon which a positive gross diagnosis can be made when it is found. Occasionally the action of *Bacillus larvae* in some of the infected larvae is for some reason slower than in the others, and, as a result, some reach the pupal stage before death. They may have started even to take the form of the adult bee (Fig. 2, o). This does not occur in large numbers but may be recognized by the fine, thread-like tongue of the pupa which was extended at time of death. It usually remains fastened to the upper side wall, slanting slightly inward from the head of the pupa (Fig. 2, d). This symptom when found should aid the beekeeper greatly in diagnosis of American foul brood.

### Both Diseases in the Same Colony.

This brings the discussion down to occasional cases of so-called mixed infection, where both diseases are found in the same colony. These have a more reasonable basis for causing confusion and come more nearly requiring a bacteriological examination. Here, however, the colony as a whole must be taken as a unit instead of the individual larva. As far as is authentically known, the organism causing European foul brood, *Bacillus pluton*, has never been found in the same larva with *Bacillus larvae*, the cause of American foul brood. Individual larvae may be found in the same colony affected either by European foul brood and contain *Bacillus pluton* with associated secondary invaders, or affected by American foul brood with *Bacillus larvae* alone. Neither one of these organisms is found as a secondary invader to the other. The proof of this lies in the fact that *Bacillus larvae* prevents the growth of any other organisms after it has once invaded the larva. *Bacillus pluton* would be unable to develop as a secondary invader because of unfavorable growth conditions produced by *Bacillus larvae*. If by any chance *Bacillus larvae* were able to develop as a secondary invader to *Bacillus pluton*, which is not probable, *Bacillus larvae* because of its vigorous growth and putrefactive functions in the larva would destroy *Bacillus pluton* before much chance of its being detected even under the microscope. In the 50 or 60 samples of mixed infection found among several thousand samples of brood diseases examined by the writer, there has never been found any indication of the presence of both organisms in the same larva.

### Conclusions.

The lesson to be drawn from this rather hasty discussion of the problem of the difficulties of accurate gross diagnosis of the brood diseases of bees, is one which every beekeeper can take unto himself to a great extent. Sufficient time should be taken to study carefully all the symptoms and not make a snap judgment on some one apparent outstanding feature which may prove to

be inconclusive. The man in the apiary has a big advantage over the laboratory observer as far as gross symptoms are concerned, in that the former has entire colonies in which to make observations while the laboratory worker generally has but a few square inches of comb to study, often not in the best of condition. This necessity for making a minute search for details in

the laboratory, such as described above, has strongly emphasized the benefit to be derived from a careful study of all the symptoms present. One should not jump at ill-advised conclusions from insufficient observations but should carefully weigh all points before making a decision. It will be found that this will save both time and money.

Washington, D. C.



IN and around Medina we have about 1700 colonies of bees scattered along good roads, the apiaries averaging 75 colonies each. Some of the

yards are run for queens, and some for bees, but more and more we are running for extracted honey. This locality is not at all adapted for the production of comb honey; in fact, Medina County has never been considered a good locality for honey of any kind. Last year we had between 14,000 and 15,000 frames of foundation drawn out. We extracted a carload of honey, and saved for spring two or three full combs of sealed honey per colony. Next year, if the season is favorable, we expect to do much better—two cars, perhaps.

I doubt whether Medina County will ever produce finer honey than our 1921 crop. Probably due to the extra amount of hot weather all our honey was heavy, tested with the hydrometer, 42.5 degrees Baume, and rivaling the far-famed thick honey of the dry Rocky Mountain district. Extracting, pumping and straining are all more difficult when the honey is thick, but give me the thick honey!

In my last article I described some of the honey-houses of the Northwest. I now propose to say something about the various parts of the equipment used for extracted honey. In extracting just one carload of honey something can be learned, especially when one is in touch with ideas submitted and used by hundreds of good beekeepers and is willing to try every idea at least once. I believe I could write a small book on plans of our own and of others that we have tried—plans that did not prove practical. Such a tale might be interesting, but would not be worth very much.

#### The Extractor.

We use an eight-frame Buckeye extractor permitting the reversing of the combs under full motion, once, twice or any number of times. This outfit has been previously described on these pages, hence no detailed description is necessary, aside from that given in the illustrations. Fig. 1 shows the arrangement of the equipment that we prefer.

## THE EXTRACTING EQUIPMENT

### *Arrangement of Apparatus and Methods for Speed in Uncapping, Extracting, Straining and Disposal of Cappings*

By H. H. Root

In the background are the supers of full combs next to the uncapping table. The empty supers are stored in the foreground next to the door.

For power, we use a slow-speed one-horsepower electric motor. In the course of a year we receive many inquiries as to the size of motor required to run an extractor. A one-horsepower, if of a good reliable make, capable of handling a certain overload, is usually large enough, especially if the operator is willing to give the reel a push by hand as it is started. If the honey is thick and it becomes necessary to elevate it as much as 10 feet, I advise a larger motor, as the extra cost at the start is not great and the current used by a larger motor running light is frequently but little greater than that used by a small motor working to capacity. A two-horsepower motor is ample for any emergency.

#### Warming the Honey.

Our honey was so thick last year that it seemed advisable to raise the temperature somewhat to facilitate the straining. We did not care to get it hot; therefore following a plan suggested by R. A. Bray of Big Timber, Mont., as shown in these various illustrations, we merely surrounded the vertical pipe from the pump with a larger pipe, making a water jacket into which we introduced steam. It depends upon the flow of honey from the pump through this inside pipe as to the temperature secured, but on the average we were able to raise the temperature of the honey 10 degrees, which was all we wanted. For shipment in 60-lb. cans it is not a good plan to heat the honey to 150 or 160 degrees, as this delays granulation, and granulated honey ships more safely than liquid honey. When packing in smaller cans for local market, heating to 160 degrees is advisable, for the purpose of delaying granulation. The steam-jacketed honey-pipe is not the best arrangement we have heard of for all purposes; but it is very satisfactory for raising the temperature slightly, and it is simple and easily installed. Of course, it is necessary to use extreme care in making all the pipes join tight.



Otherwise, considerable condensed steam is likely to be added to the honey—unintentional “watered stock.”

Mr. Bray goes further in his own extracting apparatus. He punches a small hole in the side of the extractor under the bottom, and introduces through this hole a very small steam pipe. Opening the valve slightly permits steam to circulate under the bottom of the extractor and to escape around the outside. This plan heats the bottom of the extractor and assists very materially in warming the honey. It discolors the enamel on the extractor, but that seems to be the only disadvantage.

#### Straining.

While we have tried a good many different forms of settling tanks having partitions, etc., we prefer the plan shown in Fig. 2. A long soft bag of cheesecloth the full depth of the tank is tacked to four sticks, as shown, and the honey is pumped inside. No honey is drawn off until the tank is full, and then only fast enough to keep the tank from running over. No especial sizes are important. The bag should merely be as large as the tank will permit, leaving two

or three inches for clear honey outside. This plan is really an arrangement for settling rather than straining, for most of the particles of wax float to the top so that, after all, the cheesecloth does not have a great deal of straining to do. A bag two feet square and about four feet deep will ordinarily take care of 10,000 pounds of honey without cleaning. Frequently it will not have to be changed until a much greater amount has passed through. If the honey is exceedingly thick, it may have to be changed in a shorter time. When the accumulation of bits of cappings and other foreign material piles up inside the bag to a level much higher than the clear honey outside, a change is necessary. The honey is then drawn off from the tank and the bag lifted over a tub to drain. This is not a particularly easy manipulation; therefore, next year we expect to use a cylindrical basket, a few inches smaller in diameter than the honey tank, made of coarse screen with a stout band of steel around the top. This will support the cheesecloth bag inside and facilitate lifting over another can to drain when it is necessary to make a change. We

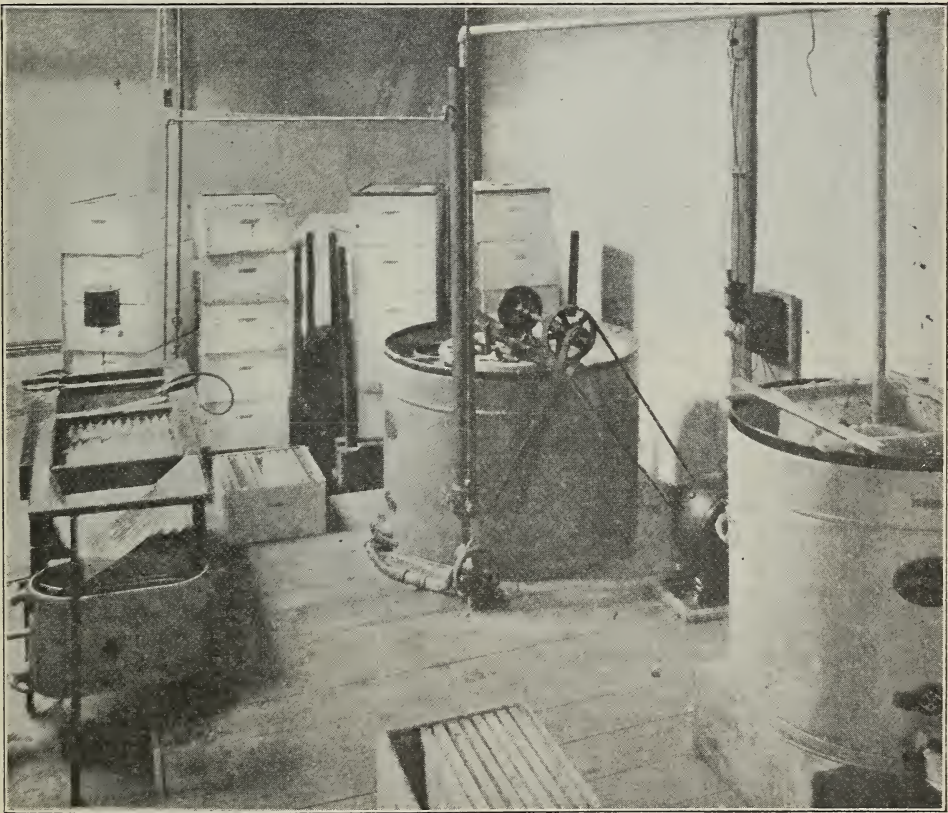


Fig. 1.—General view of the extracting room as used at Medina in 1921. The extractor was driven by a 1-horsepower motor. Steam was used to warm the honey from the pump to facilitate straining. Steam was also used instead of a stove for heating the water in the capping-melter.

shall use two of these screen baskets for the cheesecloth strainer, one to be draining while the other is in use. When a second bag is in place in the tank the work may be resumed without further delay.

This plan is no better than depending on settling tanks alone; but it is usually much cheaper, and ordinarily but one tank is needed. To be sure, the one tank when full has to be kept from running over, so can-

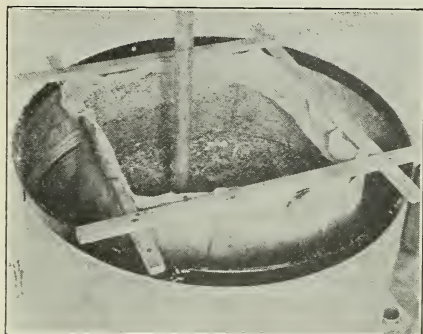


Fig. 2.—Cheesecloth bag that strained 10,000 lbs. of honey before it had to be cleaned. The particles of cappings and other foreign material float to the surface so that the strainer really has little to do.

ning is immediately necessary. With a number of large tanks the canning may be postponed, if desired.

#### The Disposal of the Cappings.

B. J. Kleinhesselink of Hardin, Mont., has suggested a very practical improvement on the capping-melter. It is simple, but sometimes the simplest ideas are the most valuable. The bottom of the melter, instead of being flat, has V-shaped corrugations (Fig. 3). The melting surface is thereby greatly increased; but what is more important, the ridges assist greatly in the quick melting of the cappings, leaving cleared spaces underneath the wax for the honey to run away quickly. There is nothing to clog up, even if old brood-combs are being uncapped so that there is considerable fibrous material in the wax. In my opinion, the capacity of such a melter is about 50% greater than one of the same size but having a flat bottom, and, what is more important, the honey is less likely to be injured.

Most of the time we had two uncappers at work with steam knives. The capping-melter with two operating is crowded, or else there is practically no room for the storage of uncapped combs. It is easy, however, to build a rack on one end of the table having a tin trough underneath to catch the dripping honey from the uncapped combs. This allows the entire length of the melter for the two operators (Fig. 3).

Unless steam is available, it is not pleasant to stand over a two or three burner gasoline stove in a room already too warm for comfort. Therefore, personally I have never been over-enthusiastic over capping-melters.

Moreover, the honey is frequently injured somewhat, both in flavor and in color. I do not believe the capping-melter exists that does not have at least a slight effect on the honey. In extreme instances the color is changed so greatly that a difference can be noticed 50 feet away when a jar of honey from the melter is compared in a good light with the same-sized jar containing honey direct from the extractor. I shall give some statistics in a later article as to the proportion of honey in the cappings compared with that extracted, but 15% is probably a minimum and 30% to 35% a maximum of the total amount of honey that is cut off with the cappings. With care a capping-melter need not darken the honey greatly, and if this honey is mixed with the honey that is extracted the effect is not very noticeable. I have always felt it a mistake to pour honey badly discolored from a capping-melter in with good honey. With a capping-melter having a corrugated bottom, I am satisfied that the honey, if the melter is carefully handled, need not be greatly injured.

In any building having steam it is advisable to avoid the use of separate stoves by

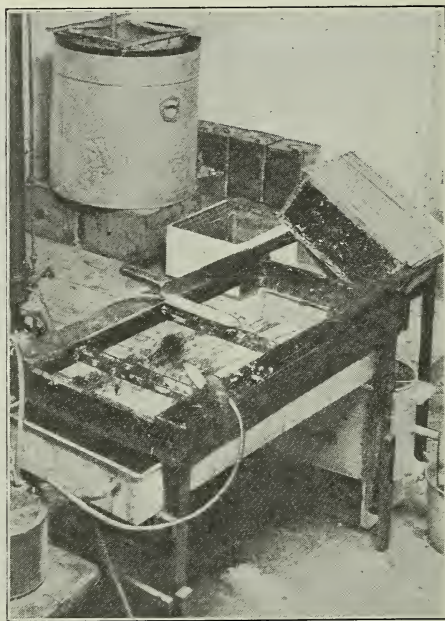


Fig. 3.—Capping melter in which the hot water is heated by steam. The steam enters at the lowest end of the melter and the water overflows at the highest end. The extracting was done so far from the power house that the steam contained a great deal of water. To get dry steam for the uncapping-knives we had to use a copper boiler over a stove. We have experimented with four or five different electrically heated knives, but have always returned to the steam knife, as there is no difficulty in maintaining a uniform temperature with a steam-heated blade. The rack built beyond the end of the melter furnishes storage space for uncapped combs and gives two operators plenty of room for uncapping.



running the steam into the water at the lower end of the melter, allowing the excess of hot water to overflow through a pipe near the top of the upper end of the melter. I prefer hot water rather than steam, as the water is not likely to reach quite as high a temperature as though the bottom of the melter were heated directly with steam. Therefore, there is less danger of discoloration of the honey.

R. F. Holtermann of Brantford, Ont., Can., after experience with more than one type of capping-melter, has abandoned melting the cappings as they slide from the combs. He uses a large press and forces the greater part of the honey out of the cappings; then he melts the dry cappings, practically free from honey, later on at the end of the season. Draining alone does not permit enough of the honey to escape, especially in a locality where the honey is thick. E. F. Atwater of Meridian, Idaho, after making careful record one year of the amount of honey he secured when he melted up his entire batch of cappings and comparing this amount with his total crop, reports that four per cent of the total crop is left in the cappings even when the most improved methods of draining are followed. In a locality where the honey is much thinner, this percentage would be greatly reduced. Mr. Atwater recommends warming the cappings and honey, and then having some means for separating the two. H. M. West of Parma, Idaho, uses a combination of warming, draining and pressing. He finds the pressing of cold cappings very slow work on account of the thickness of most of the Inter-mountain honey. Fig. 4 shows Mr. West's melter (or, rather, warmer, for he does not melt the cappings) and his press. The right-hand end of the "warmer" is elevated so much that the cappings slide down rapidly without melting. The temperature of the honey can be controlled by the pitch of this "slide." Without warming he used to fill one of the perforated cylinders in half a day. By warming the honey and cappings it takes all day to fill one cylinder under the press, and most of the warmed honey has drained out before pressure is applied. The screw is then turned down hard in the evening and pressure left on all night. This plan requires considerable equipment, but it does not darken the honey. It is really a combination of three plans.

#### Steam Uncapping-knife.

Several have suggested another tube for the steam-heated knife so that the water of condensation may be carried away from the honey. This seems to me an unnecessary complication. The knife would not only be more expensive, but the free movement of the blade would be interfered with by reason of the double tubing. And, why the complication? Only a fraction of the water finds its way into the honey, most of the moisture being absorbed by the air in the room. However, if a small boiler were used to furnish steam and all the water in that

boiler were poured into the honey and cappings during the time that amount of water in the boiler would have furnished steam for uncapping, I do not believe the honey would be thinned enough to be noticeable even when testing with a hydrometer; and it must be remembered, as pointed out before, that only a very small part of the water in this boiler actually finds its way into the honey.

We have tested several different forms of electrically heated uncapping-knives, but we have never yet succeeded in getting an element that will remain hot when submerged in cold honey and still not almost instantly overheat and even burn out after the blade passes through the comb, especially if there is a momentary delay while one is reaching for another comb. In case of a steam knife there is no difficulty in keeping the temperature always uniform.

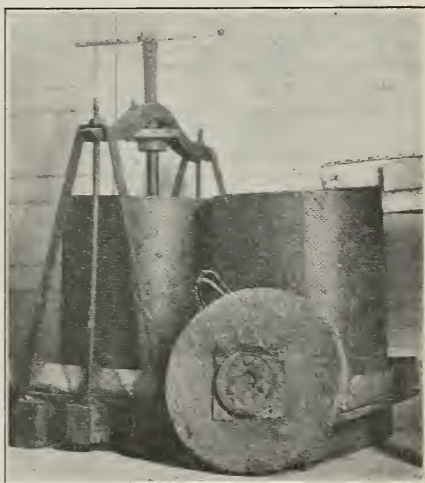


Fig. 4—H. M. West of Parma, Idaho, tried pressing the honey out of cold cappings, but with the thick, western honey it is a very slow process. Mr. West elevates one end of his capping "warmer" so that the cappings slide over into the press unmelted. The honey, however, is heated enough so that it presses out easily.

#### The Honey-pump.

The question has often been asked whether the honey-pump does not introduce air into the honey. Yes, under some circumstances, it does, but most of the air is introduced in the extractor. When the honey is quite thick a strong light reveals honey flying to the side of the can in streams so fine that it resembles a mist. The thicker the honey, the more the air is mixed with it. For this reason it is advisable to extract combs that are warm. If the weather is not hot at the time the extracting is done, the extracting room should be made hot by the use of stoves, for the thinner the honey, in my opinion, the less the air is introduced in the process of extracting. The pump should not run any faster than necessary to keep the extractor empty.



## EUROPEAN FOUL BROOD

### Two Difficulties Encountered in Cleaning up This Disease and How One Was Solved

For three years I have battled with European foul brood in my West Virginia apiary and have encountered every form and phase of this deadly disease. During these years I have given the subject much study and have learned more than I ever expected to know. I have been fighting the disease against fearful odds, as I can not get to my apiary until the last week in May, and any one familiar with the disease knows what frightful ravages can be wrought during the months of April and May, even in this latitude, if the season is propitious for brood-rearing.

I have reached the definite conclusion that the beekeeper may as well make up his mind to fight this disease year after year, if it ever gets a foothold in his neighborhood, because, although we can secure perfect co-operation of all the beekeepers and eradicate it in our apiaries, there will remain a continual source of re-infection from the bee-trees in the vicinity. So I for one have joined battle to the bitter end. I am not discouraged at the prospect, because I have learned how to clean up the disease in my apiary. (When I left in September I was convinced after the closest inspection of all my colonies, that I did not have a single diseased larva.) I am also encouraged, because I know that the native black bee, which is of questionable value, is doomed. As the bee-trees become inhabited with pure Italians, the chance of infection will be much less. Furthermore, I am encouraged, because the jack-leg beekeepers, who store their bees in boxes and "beegums," will soon drop out.

I shall not discuss all phases of the subject, but shall turn to the two real problems.

In my experience I have never succeeded in cleaning up the disease by removing the queen for a period shorter than 27 days. I have requeened with the very best Italian queens I could buy and in every colony into which I have introduced them on the tenth, the fifteenth and the twentieth day, I have found an outbreak of the disease within two weeks. I feel sure that the infection came from inside the colony, for in the same yard, where there might be cases of robbing in hives that are weakened from disease, I have not yet had a single case of re-infection during the same season, in colonies that had been kept queenless for 27 days. I do not dispute the experience of others in this matter, but I am simply giving the facts from my own experience.

Allow me to make a statement for the benefit of those beekeepers who have not

had experience with this disease. It is essential that three things be done, if the fight is to be won. First, the very day you detect the disease, remove the queen. Second, do not try to clean up a weak colony. Put two weak ones into one hive and destroy any frames having brood that you can not get into this one hive. I have found that frames of honey taken from a diseased hive will not transmit the germs to a healthy hive, though I do not advise transferring such frames to healthy hives. Third, never allow any colony in your yard to become weak, for you may have overlooked diseased larvae at your last inspection and robbers from the healthy hives will spread the disease all through your apiary. This is most important.

Now we are ready for the gravest difficulties I have encountered.

It has been my experience that any colony that is forced to stay queenless for a long period will become very slack on honey-carrying, but very strong on pollen-carrying. And their combs soon become pollen-bound. In my beekeeping experience I know nothing that so demoralizes me as this. I do not know any practical plan of overcoming it. I have tried placing these pollen-bound frames, two at a time, in a hive-body over a new swarm that has been hived in a brood-chamber with only two frames of drawn-out comb, the rest being only foundation, or over a colony obtained by dividing. This has occasionally resulted in cleaning up the pollen-bound frames, but I can not call it a success at all commensurate with the trouble involved. I am not ready to offer a solution for this difficulty. Will some other beekeeper tell us how to meet it?

The more serious difficulty, however, has in a fashion been overcome. This difficulty is the development of laying-workers in the colony that has been kept queenless so long. Any one who has ever had those crazy old maids to deal with, when they once get the taste of having children, knows something of the seriousness of this difficulty.

I find that about three out of five colonies that have been kept queenless for 27 days will develop laying-workers.

Here is my plan for preventing it: Remove the queen on the first day; cut out queen-cells on the ninth day; introduce a capped queen-cell in a protector on the tenth day; the queen emerges about the fourteenth day and the queen is mated on about the nineteenth day. Cage the queen on the twentieth day; introduce the new Italian queen in a cage on the twenty-fifth day, and release her on the twenty-seventh day.

Not once has this plan failed to stop laying-workers.

H. B. Arbuckle.

Davidson, N. C.





## FROM THE FIELD OF EXPERIENCE



## NORTHERN CALIFORNIA

## Vast Expanse of Virgin Beekeeping Territory in the Great Star Thistle Region

When one exists but is not on the map, how does he proceed to put himself on the map? Or, more properly speaking, when one is on the map and everyone, including the map, is unaware of the fact, what then?

Chico, Butte County, Calif., is in that fantastic predicament. Bee journals and writers generally appear to have formed a soviet to locate northern California between Sacramento County and the Tehachapi, a range of mountains crossing the state from east to west, fully 300 miles south of its geographical center. Everything below the Tehachapi is southern California, and the restricted territory above the Tehachapi, by the same token, northern California.

Before our government acquired this state there were two Californias, Alta and Baja, upper and lower, the dividing line being along the southern boundary of San Diego County, about where it is today. Later, when a sleepy little Mexican village vaguely known as Los Angeles, assumed municipal proportions, she staked out the country between Baja California and the Tehachapi into city lots, virtually seceded from the state and named her pre-emption, southern California.

Los Angeles' first claim to supremacy was climate. Her next, the production of fabulous quantities of sage honey, the possibilities of which were first demonstrated by John S. Harbison who, back in the sixties, moved his bees south from the Sacramento Valley in central California. Then came the Los Angeles citrus groves and a second delicious honey to enhance her fame.

But unlike the sage, citrus groves proved of a migratory nature and refused to be corralled south of the Tehachapi. They have worked their way steadily northward until thousands of acres flourish at the very door of Chico, and many fine groves as far north as 30 miles. And, oddly, the northern fruit is usually marketed by the time the southern harvest begins. So, although the Tehachapi may be claimed as the beginning of northern California, its further end reaches fully 700 miles beyond this arbitrary line.

And now one-half the length of the state from the Tehachapi, comes Chico featuring California's third A-1 honey, star thistle, as an exclusive product of northern California. Reference to the map will show that Chico bears practically the same relation to northern California as Los Angeles to southern California. Each is the logical center of a wonderfully productive honey district, and each is about the same distance from its respective state lines, Oregon and Arizona. Thus, geographically, the one is

southern California; the other, northern, and both with oodles of climate peculiarly their own.

Three-fourths of the state lies between these two centers. Since southern California has never laid claim to this territory, and Chico has no immediate intention of extending its suburbs by annexing Marysville, Sacramento and other middle California towns, why not designate these cities and their counties, middle California, with Berkeley and the State University as their center? This middle section also has its distinctive honey, the main flow being from irrigated alfalfa, though there is considerable sage and orange honey produced in addition.

We now come to a marked apicultural difference between Chico and Los Angeles. The beekeeping part of Chico's population has an aversion to staking off surrounding counties into town lots. Indeed that would be most disastrous, for star thistle is a renegade that flourishes best on large ranches, which, subjected to subdivision and consequent intensive cultivation, would soon cause that intruder to disappear and star thistle honey to become but a fragrant memory. Again, while Los Angeles has for 50 years or more been the center of extreme activity in apiculture, the counties that surround Chico are virgin territory, so far as honey production on the scale practiced in southern California is concerned. The one has arrived at its zenith; the other has barely discovered its own existence.

This self-discovery was aided and abetted by the attendance of five members of the Butte County Bee Association at the Berkeley School for beekeepers held in December, 1921. It is the first time since these extension courses were inaugurated on the coast four years ago that representatives from northern California beekeepers have been present.

D. Stuart.

Chico, Cal.



## GRABBING THE HONEY FLOW

## How to Have Colonies Ready on Short Notice When Honey Flow Comes Unexpectedly

A generation ago the burden of instructions to beekeepers was on building up colonies in the spring, pulling from the strong colonies to strengthen the weaker, in effect averaging downward. In the hands of the novice or person of poor judgment the results were often disastrous. In the hands of such experts as Dr. C. C. Miller, where clover was the main flow, the practice was excellent; but here in southern New England where a clover flow seldom occurs, it was more often than otherwise that the practice was not good. So some other plan had to be evolved.



## FROM THE FIELD OF EXPERIENCE



The plan I am about to describe may not be and probably is not original. When one has read hundreds of bee books and about a dozen magazines every month go under his eyes, he oft stores away in the mind little items which are for the time forgotten and later bob up as original ideas; so I am not at all sure that the following plan is original with me, but it does work profitably.

First, let me explain that we have a series of short flows from which we at times get a surplus; but the flows are erratic. we are never sure of any one of them and now and then get none of them. Sometimes a good flow comes when no colonies are big enough to profit thereby, and then we must be able to step in and help the bees or lose out so far as surplus goes.

I keep all my colonies in pairs, as advised and practiced by Dr. Miller; it has many advantages, though at first I thought differently. That is the basic item in the plan under consideration. The next item is to help up the colonies which are slightly below profitable size; and I do it by pulling from the weak ones, even to the extent of exterminating them. This makes fair ones good, and cuts out all colonies which are not and cannot be producers. It will also be noted that the big, strong colonies are not disturbed—in other words, weakened to help weak or medium colonies.

Now a keen eye is kept on the condition of the plants from which we may get a surplus, also a sharp eye on the weather. It will be seen that one must be familiar with the honey sources of his locality and the nature of the soil and moisture conditions. Even with all this knowledge a change in temperature may upset the best of forecast.

But granting that we anticipate a good flow from some source, at once we proceed to grab for it, making all colonies that have a fair chance of getting it so strong in field bees that they cannot miss it. Right here is seen the immense advantage of the twin stands. One of the two colonies on the stand is moved to a new location, preferably some little distance off, say several hive spaces or into another and distant row. This is to lessen the possibility of the field bees finding their old home.

The hive left undisturbed on the old stand is provided with an excess of storage room, off by lifting the supers with contained bees from the removed colony to the one on the old stand. This practice is followed with every pair of hives, the only exceptions being where both colonies of a pair are very strong, big enough to produce a surplus without help; such are let alone.

Now for the results. The field bees from the removed colonies are a bit confused on their return, but soon go into the hive adjacent to their old location. Having a load

they are well received, and soon all confusion disappears and work proceeds with vim. Henceforward it is only necessary to see that they have plenty of storage room.

What happens to the removed colonies, do you ask? Usually they quite promptly proceed to requeen, and if we are alert we can get without trouble a fine lot of young queens for all our colonies. If we remove the old queen as soon as the cells are well started swarms seldom appear, and even if the old queen is not removed, only supersedure occurs in most cases. These particular colonies get into the very best of shape for later flows or for winter, where the moving practice occurs for a late summer flow.

The producing colonies produce honey as we intended, rarely swarm, but usually finish the season with worn-out queens, though sometimes supersedure occurs.

All this is very plausible, but what are the drawbacks? Absolute need of knowledge of locality as regards soil, moisture and honey sources, and some lifting of colonies. This latter is done before the moved colonies are heavy with honey; in fact, the best time to move them is a day or two after the bees get really busy on the source of the expected surplus.

For a postscript let me add, keep an eye on the removed colonies if a change in the weather suddenly checks the flow; otherwise they may suddenly starve, because they have very few field bees.

Providence, R. I. Arthur C. Miller.



### HEAVY YIELDS IN MONTANA

Average of 300 Pounds per Colony from Alfalfa and Sweet Clover

While our location is rather far north to be considered a beeman's paradise, I still think we are able to compete fully with most so-called bee countries. I had 40 colonies, spring count, increased to 68, and took off 8,000 pounds of first-grade light honey, mostly from sweet clover and alfalfa. We have quite a bit of dandelion in spring which comes in handy for brood-rearing.

I left 5,200 pounds on the bees, or an average of 80 pounds, which will seem an excessive amount to southern beekeepers, but we try to play safe up here.

A man within one mile of me took off 12,000 pounds from 40 colonies, spring count; but, of course, he did nothing else, while I ran an irrigated farm in addition to my bees.

In packing bees for winter, we use the quadruple case without covers or tunnels for entrances, just contract to about three inches, and use fine straw or chaff for the packing. My cases are built of shiplap and covered with cheap tar paper.

Carterville, Mont. Claude M. Pease.



MY! Isn't that an attractive picture on the cover page of Gleanings for April? Almost any one after looking at that would want to open and see what is inside.

\* \* \*

Vol. L on the cover page reminds me that it is now nearly 50 years since I first received that tiny eight-page baby Gleanings. What a healthy, vigorous growth it has had, expanding from eight to seventy-two pages!

\* \* \*

Allen Latham, on page 225, makes out a pretty good case for rearing a good supply of drones during the honey flow. Can he tell us just how many drones it takes to satisfy the sexual instincts of the undeveloped females of a colony? Would not 500 answer as well as 5000? This would give 50 to each comb in a ten-frame hive.

\* \* \*

I put out a mixture of honey and water, half and half, on March 1 to see how much cold it would stand before freezing; but our coldest weather was passed, and we had but one morning when it was as low as 7 degrees above zero. It stood this temperature without any indication of freezing. Who can report a lower temperature without freezing?

\* \* \*

J. D. Yancey, on page 236, objects to dropping the word "extracted" before honey on labels, to distinguish it from the old-time "strained honey"; but he says this old-time quality has nearly disappeared from the markets. This being the case, it would seem to be a good time to drop the word "extracted," giving rather the name or source of the honey instead.

\* \* \*

M. C. Richter, page 223, gives a most interesting account of taking observations on the outside of the hive, that may be studied with profit by young beekeepers. Quite as important, it seems to me, is when entering a yard to note the sound of the bees. A practiced ear can tell at once whether they are having a holiday, swarming, gathering honey to beat the band, or up to the meanest of all business, robbing some defenseless colony.

\* \* \*

Those two articles in April Gleanings, "Wonder Work of Bees," by A. H. Hendrickson, and "Beekeeping and Agriculture," by Geo. S. Demuth, cover one of the most fascinating subjects connected with farming or beekeeping, viz., the cross fertilization of flowers. I wish the facts in these two articles could be put into a small bulletin by themselves and furnished at cost



for gratuitous distribution among farmers and fruit-growers. I feel sure a great many beekeepers would like to buy them for this purpose. This subject has

become almost a science of itself; yet if we go back 25 years, very little was known for certain about it. My! but isn't this a great world to live in, and a great age of the world to live in, too? What a pleasure to live in the open where such wonders are going on! Yet some folks will neglect these wonderful thoughts and go to the movies or a dog fight for amusement. I am sorry for them.

\* \* \*

In no way is the advance in the beekeeping industry seen more clearly than in the matter of advertising. Fifty years ago a page or two seemed to satisfy the patent-hive vendors and queen-dealers, while today nearly 40 pages of Gleanings in Bee Culture are required to make known the multitudinous wants of honey producers, honey dealers, manufacturers of containers and bee supplies of all sorts, everything a bee keeper can think of, and a great many things few of us have any use for.

\* \* \*

On page 221, the Editor calls attention to the "Spray Poison Evil," which is both timely and important. I do not think it so great an evil as we formerly thought, for in many years it does little harm. If the weather is cool or cloudy, or if dandelions are yielding freely, spraying seems to do little harm; but, taking the years together, it is bad enough. I fear there has been some rather slipshod teaching along these lines in some of our agricultural colleges. Attending a meeting of beekeepers some time ago I related how much damage spraying had done to one of my yards of bees, when a professor arose and made the statement that he did not believe bees had ever been injured by the spraying of fruit trees. Tests made in the laboratory showed that bees would not take poison sprays. I then stated that I had gathered up the dead bees by the handful and sent them to the Department of Agriculture at Washington for analysis and arsenic was found in their bodies. He replied that arsenic might have been found in the bodies of healthy bees. I confess my patience received a severe jolt and my respect for professors and laboratory tests dropped a long way below zero.

P. S.—It affords me pleasure to state that that professor, who was at the head of the apiarian department of an agricultural college for a time, has quit teaching and gone into the more prosaic business of repairing automobiles. We wish him success in his new business.

IT would be impossible to sum up the charm of California in one word, but its contrasts explain much of its fascination for me. They begin to dawn on the

tourist almost as soon as the train enters the state, and by the time it is running through level, fertile valleys with their semi-tropical growth, their fruit trees, palms and flowers, while, deceptively close, tower the great mountains, crowned with glistening snow, the contrasts almost take one's breath away. And it is largely due to the mountains that California is so "contrasty." (Our landlady took her dictionary and sewing machine along with her when she rented us this furnished house, but I have heard my brother talk of "contrasty" photographs, so I'll just call it a word. One has to coin adjectives, and sometimes use them in the superlative degree, when trying to describe the West, for the old eastern ones are quite inadequate.)

The mountains not only cause the climate to be full of contrasts and are themselves such a beautiful contrast to the valleys, but their appearance from day to day varies greatly. For instance at times they are seen dimly through a blue haze and look far away from us here in Pasadena. At other times they quite disappear behind clouds or fogs, and later a cold rain falls in the valley. Then perhaps late in the day or the next, or the next after that—for California rains are not apt to be mere showers—the clouds break, the sun comes out gloriously and there are the great mountains with snow half way down their slopes, the setting sun tinting the snow to a glowing pink, making a picture no human artist could reproduce.

When a large amount of snow falls on the near-by mountains it creates a curious optical illusion. The mountains seem to be crowding so close to the town that they look fairly menacing, as if they were advancing on us puny mortals to exterminate us.

Ordinarily the San Gabriel range from here looks like a long, unbroken but serrated ridge in which certain peaks merely stand up a little higher than the rest. But a few weeks ago after a heavy snow storm in the mountains, the nearer ranges stood out from the higher ones so distinctly that I felt I was seeing my favorite view through an old-fashioned stereoscope. You who are old enough can remember how pictures gained depth and lost their flatness when viewed through the stereoscope. It was just so with the mountains. The nearer and lower peaks moved toward us, revealing in the background great peak after peak in the blue distance.

A San Francisco man once said to me, "Los Angeles County has no natural beau-

## THE LAND OF CONTRASTS

CONSTANCE ROOT BOYDEN  
(Stancy Puerden)

ty; that country is all reclaimed desert." I suspect that is true as far as the beauty of the valley is concerned. But the fact that all this beauty was

brought into being by man using the magic of the melting mountain snows makes it all the more fascinating. When we drive about the vicinity of Pasadena with its wealth of shade trees, green lawns, roses and rainbow-hued flowers I like to think of the contrast between the desert it used to be and the beautiful present. One does not have to overwork his imagination to picture the desert; for, in taking almost any cross-country drive, unimproved desert country may be found, and the contrast is emphasized by the perfect, asphalt-like roads.

WOULD you enjoy life in one of those regions where the sun is advertised to shine some three or four hundred days of every year? You would have to take an occasional trip to a cloudy country to bring out the beauty of the climate by comparison. For my part I am thankful that we have the contrasting weather right with us here in southern California, although we do not have the sharp contrast between summer and winter of the North and East. We have days when the sun shines and the air is so dazzlingly clear that we can see not only the near-by mountains with Baldy peeping over their shoulders to the east, but also snowy ranges 80 or more miles away, the peaks floating above the horizon like a mirage. And after a few days of that glorious sunshine, when the weather begins to grow uncomfortably warm, soft fogs drift in from the ocean to temper the heat and rest the eyes and nerves.

Before I became a Californian I used to be much interested and a trifle amused to hear people tell of the wonderful variations in climate within a few miles. But after riding about the country immediately after the great freeze and seeing orange groves apparently quite unharmed, while a quarter of a mile away the trees looked as though a blight had descended upon them, those climate stories looked more probable. Indeed, we even saw groves unharmed on one side of the street, while they were badly frosted on the other, due to currents of wind, we were told.

The various valleys between ranges afford such variations of climate that it is possible to raise fruits which thrive in cool climates in the same latitude with oranges. For instance, I have eaten delicious apples which were grown only a short distance from here; and, although apples are not grown on a large scale in this valley, it is nothing uncommon to see them in a yard close to an orange tree.



But it takes a real estate agent to bring out the contrasts in climate. The town of A is from six to eight degrees cooler than B through the summer months, we are informed, because of the draft through the canyon, said towns being not three miles apart. Yes, C is pretty warm in summer if you live in the east part of it, admits a real estate agent, but the west side is delightfully cool, as there is always an ocean breeze around a certain mountain to temper it. D, being not far from the ocean, is cool as a summer resort in summer, according to the agent who lists houses in that region; but, if you mention it to an agent interested in another locality, you will learn that you never could stand the summer down there on the flats as it is so hot.

Now I don't agree with the woman who told us, "California has more liars to the square mile than any other state in the union." I suspect there is truth in all their contradictory statements, at times. They just prove that California is "contrasty," even if it hasn't a well-defined winter and summer.

In other articles I have mentioned the sharp contrast between the temperature in the sunshine and in the shade, a contrast which I very much enjoy, but fail to understand its cause. I suppose the delightfully cool nights which follow the warm days should be attributed to the same cause.

When a Californian is confronted by a tourist who complains of the cold weather preceding a rain he always retorts, "Well, we don't have to wade through mud and slush even it is a little cold at times." It is true, the streets are clean and ordinarily perfectly dry. That is what makes the contrast during a rain so amusing. After it has been raining only a short time both sides of the streets are rushing torrents, making the passage across almost impossible to pedestrians. You see the water rushes down the steep mountain slopes and through the towns in the valley. It is nothing unusual to see a kind motorist drive up to a curb where a lady is standing, take her on his running board, drive across the street, deposit her on the curb and drive on his way. At certain places in Los Angeles heavy planks are strapped to the telephone poles to be used in bridging the torrent from curb to street cars.

During a dry summer in the East small streams sometimes go dry, but here in the West most of the rivers, arroyos or washes, as they are called, have water in them only during or soon after a rain. "I don't mean to be critical," as a friend always says when he does, but if I ever grow homesick for eastern scenery it will be for rivers and brooks with water in them.

**A**FTER some three months of house hunting I have come to believe that nowhere are California contrasts more marked than in dwellings. There are great estates with enormous houses in any part of the

country, but I never saw so many tiny, one-room bungalows as in this vicinity. Whether it forms the nucleus of the permanent home which is built around it later, or whether it is used as the garage later, it is a good way to evade the high rents, and in this mild climate it can be done without great discomfort.

And there are such extreme contrasts in style of architecture. A typical old California house, whether bungalow or two-story, has extremely wide, overhanging eaves, in some cases more than five feet wide, to shade the windows as much as possible. And as soon as his house was finished the owner planted everything he could think of to secure more shade. Magnificent old date palms are in many yards, and great, drooping pepper trees, many varieties of acacia and pergolas with immense vines keep out all the sunshine and light possible. The exteriors of these old houses are apt to be of shingles, stained dark brown, and the interior walls are papered or decorated in something equally dark. One would think the inhabitants of such a house would look like bleached celery, if they stayed indoors much.

In contrast with these old houses is the latest thing in stucco in white or very light colors, perhaps pink trimmed in turquoise blue. These have no overhang to the roof and most of them substitute courts, patios or terraces for the comfortable, shady porch, even though there is not a tree on the place to afford any shade. When I see these shadeless, porchless houses and the processions of automobiles on all the boulevards on pleasant afternoons I am inclined to believe that the modern Californian has substituted the motor car for his porch or his own "vine and fig tree." It is only fair to state that there are many charming houses between these two extremes which have both sunshine and shade about them, but I was merely contrasting the old with the very new. As one real estate agent told me, "If you will have a house with a porch you must be satisfied with something that is a little old fashioned, for porches are seldom built now."

**A**N interesting contrast in California is that afforded by the cosmopolitan character of its population. A Californian born and bred is quite rare. I have met only one myself. Here are two questions which are asked us so frequently that I have come to expect them and sometimes volunteer the information: "How long have you been here and where did you come from?" A former Massachusetts man who asked me those questions on meeting me said, "I shouldn't think of asking them back East, but everyone does it out here and no one seems to regard it as rude." California might be regarded as a beautiful "melting-pot" for making enthusiastic Californians of people from every state and from all other parts of the world.

THERE would not be the hard feeling against us poor sideline beekeepers in the breasts—and pocket-books?—of the professional honey-producers, if we were all of the type of Miss Josephine Morse of the Cloverley Apiary, Lancaster, Massachusetts.

Nearly all reading beekeepers know of Miss Morse, who is now the enthusiastic secretary-treasurer of the Worcester County (Massachusetts) Beekeepers' Association. But perhaps they do not all realize what a fine example she is of persistence in the face of discouragements, and how convincingly, therefore, she has proven herself a real beekeeper. "I must have been born to be a beekeeper," she admits, "because nothing can seem to discourage me permanently."

In another way she seems particularly beekeeper-y. And that is in her appreciations. As a whole, are not beefolk lovers of the beauties of God's good earth? Speaking of the town of Lancaster where she has always lived, Miss Morse calls it a "beautiful old New England town." Don't you love people who love their own home places, recognizing and appreciating their beauties? One thing that helps me to visualize the charm of her beloved Lancaster is her statement that she has lived there all her life, on a farm. So if I see it correctly, it is one of those lovely towns that run on out into the country and defy anybody to say where the town ends and the country begins.

It was twelve years ago that Miss Morse made her start with bees. She did it most intelligently and logically, as becomes a daughter of Massachusetts. She took a two-weeks' course—an excellent two weeks' course, she calls it—under Prof. Burton Gates at the Massachusetts Agricultural College at Amherst. Then she took over the ownership and care of two colonies of bees that had belonged to a brother. Then the disasters began. There were several cases of severe stinging. Then came foul brood: American foul brood; European foul brood. But, as she says, nothing discouraged her permanently. And now she has 20 colonies of her own, is secretary-treasurer of the county association and is the recognized advisor for many beginners in near-by neighborhoods. She also cares for the bees of several orchardists, as hers is rather a good fruit-growing section. Her own father has gone into rather extensive fruit-growing, especially apples and pears, and is very glad to have his daughter's bees as pollenizers.

## Beekeeping as a Side Line

Grace Allen

Miss Morse has never made any phenomenal crops. One doesn't, you know, in Massachusetts, any more than in Tennessee. One loves it. Apple

bloom comes of course when the weather is unsettled—not much clover—but a goodly quantity of blueberry, and later, goldenrod. Miss Morse extracts her honey, putting it up in 16-ounce jars and selling direct to the consumer. She wisely charges according to the prices for similar honey in similar containers in the high-grade grocery stores.

When she started, money didn't enter into her plans at all. There was just the delight of it, and the honey—and a little welcome pin money, too. But her business has so developed that now she feels her interest to be quite decidedly commercial; and still she loves the work.

In addition to her regular yard work, Miss Morse has had various interesting experiences in getting bees out of trees and buildings. She has many calls for help from beginners; she always helps as she would be helped—and as she is helped, she adds. She has also developed a new interest among beekeepers of her section in the matter of exhibiting honey and bees at the agricultural fairs, so that while little attention had been paid to this in former years, larger efforts are being put forth now and greater things still hoped for the immediate future. Which is what may always be expected from the leaven of enthusiasm.

Spring in the country! For, after the manner that I boasted of last month, we are country folk at last, burning on cool evenings our own oak wood in the brick fireplace, and walking on moonlit evenings along country roads, sweet now with the scents of spring. And here are the hills, low and gentle, too close perhaps to give us a really impressive "view" such as some of our friends enjoy, yet close and chummy; and we love them. We love, too, the dawn through our neighbor's woods lot and the bright wide book of the sunsets spread open along the low ridge to the west.

During the first weeks here, there was the glory of autumn over the earth; in the winter the flush of red where the buck bushes grow and sunsets through bare trees; now, in the spring, there is the miracle of unbelievable greenness and blossom coming back to trees and grass and fertile field and every upward-reaching slope—wild violets at our feet, mountain phlox by roadsides, small gay earth-loving "May weeds" over the fields, a blush on the hills where the



Miss Josephine Morse  
with her bees.



redbuds bloom and the thrilling beauty of fruit trees—oh, the cherry orchards today!

We have set out—how many will live? we wonder—maples and “cork ellums” and hackberries and dogwood and redbud and baby cedars and fruit trees, and many shrubs. And bought an Airedale pup. We named him Sir Jock of Lone Oak! But we call him Jock.

Wondering if the trees we set out will thrive, I am reminded of the aged man whose success in tree planting Vergil records in the apiarian Georgic. I am sorry thus to distress you, kind sir—you who do dislike reference to the classic days of the Emperor Augustus! Must you read it? It is very skippable. But the courteous Managing Editor will tell you that the plans for the rest of this article were badly disarranged by the loss of some photographs somewhere between Medina and Lone Oak Road, modern, up-to-date pictures of modern, up-to-date bee-yards and the people who work them. So it seems a most happy opportunity to return to Vergil long enough to tell about the old man of Corycys, whose gentle life I have been eager to refer to for several months. Your pat and undeniable assertion that Gleanings is being published in 1922 having nearly frightened me permanently into the present decade, you can guess how charmed I am at this pleasant opportunity? Not of my making, you see—merely claimed as it comes. This concession, however, I make—not to quote the Roman poet line after line, much as I enjoy it myself, but to re-tell the substance of it informally, weaving in a few of his especially appealing phrases.

No one knows the fame of this old man who has been so charmingly immortalized by Vergil. The poet speaks of him as an aged man from Corycys whose friendship he had made. He owned a few poor roods of worthless land—no pasture thereon for cattle, no convenient food for flocks, no good soil for vines. Yet for all that, there among the thorns, he raised his small plot of greens; and around the greens—this is one reason people have kept on loving him through all the generations of book-lovers and beauty-lovers—he sowed a few white lilies and some poppies and verbenas. And

“<sup>his soul</sup>  
Vied with the wealth of kings, when late at eve  
He heaped the unpurchased banquet on his board.”

Ah, that unpurchased banquet! Moreover, in spite of the unfriendliness of his soil, his skill made him first to gather spring's roses and autumn's ripe apples. While winter was still laying “cold curb upon the frozen stream,” he was “toying with some soft-tressed hyacinth”—flower-lover that he was.

Will you be surprised to learn that he kept bees, too? He gave them, also, such care that he was the first

“<sup>whose brooding bees</sup>  
Were in full swarm: his fingers earliest  
Pressed forth the bubbling honey from the  
combs.”

How he would have enjoyed full sheets of foundation and an extractor! For what challenges our admiration is the way his quiet life of simple wise content was dignified by faithful, intelligent, painstaking labor, with its resulting skill.

He set out lime trees and luxuriant pines. What his fruit trees promised him in blossoming spring, they bore for him in autumn. As for transplanting trees, this is what I keep recalling, when I look out at our recently transplanted maples and hackberries and “cork ellums.”

“His elm-tree saplings even when full-grown  
He could transplant, or pear-trees big and strong  
Or the young plane-tree when its spreading  
boughs  
Screened from the sun the guest who drank his  
wine.”

No such experts were the dark-skinned toilers who set out our trees! (Yet today two of the dogwood are coming into bloom, and there are signs and promises on one maple and an elm or two.)

Don't you wish we might have known him, the aged man from Corycys? Wouldn't we have enjoyed visiting him, sitting under the spreading boughs of his hospitable plane trees? Doubtless, had he lived today, he would bring up grape juice or lemonade!—and how we would all talk! What questions we would ask him! About beekeeping and hyacinths and his philosophy of life. And if invited, as quite surely we would be—being beekeepers!—we would stay to share the unpurchased banquet heaped upon his board, and feed our souls on the fineness and simplicity and rich, full-flavored personality of this beekeeping lover of God's earth.

Does this picture of Vergil's old man remind you of anybody? Can you not see in it a great resemblance to many beekeepers? Bees and flowers and fruit, skill and content and simple living—do not these things form a large part of the rich later years of most beekeepers? I have sometimes said that my mental picture of the word beekeeper is always an old man, gray-haired and adorably wise and gentle (are not the wise always gentle?), with his bee hives set in an orchard.

In his impressive and dignified lines. “Gone Home,” April Gleanings, page 255, Dr. Webley gives our imagination a glimpse of our beloved Dr. Miller being welcomed to the Other Home by Huber and Langstroth and Cowan and the “gentle Hutchinson.” Because they were so alike in the fine simplicities and noble dignities and serene satisfactions of life, may not he whom we so delighted to honor—“the Master of the Gentle Craft,” “the Grand Old Man of Beedom,” “the Sage of Marengo”—have been welcomed also, in that “white tremendous daybreak,” by Vergil's aged man from Corycys?



## FROM NORTH, EAST, WEST AND SOUTH



**In Northern California.**—Usually there is a considerable amount of honey stored during April. In fact the flow from orange and sage ordinarily is under way during this month. The most noteworthy feature of this season's work is the backwardness of plant life. Sage, orange and practically all other plant life will bloom about one month later than usual. The cold and wet weather is responsible for the lateness of the season. Consequently it is very necessary to supply the bees with plenty of stores. It may not be of uncommon occurrence during the first and second weeks of May to find strong colonies on the point of starvation. This season, especially, there must be plenty of stores all through the breeding season. It would prove very disastrous to neglect this phase of the spring work, as a three or four days' wet spell might occur just before the main flow starts. At this time there is much brood to feed, and, with bees unable to fly, several pounds of honey a day are consumed. We have seen immense colonies honeyless, with not a vestige of unsealed brood in the combs. Don't gamble with nature too much. Supply the bees with a reserve, and remember the three cardinal points during spring work—protection, stores and ample space for brood expansion.

This looks like a very good season and owing to its extreme lateness there ought to be some mighty fine bee weather with exceptionally high daily intakes of nectar from sage and orange, both of which will come into bloom and secrete nectar at about the same time. There is one important thing to provide for during a big honey flow. For spring, the important consideration was an ample reserve of Demuth feeders. Strange as it may seem, there should be provided the same kind of a reserve for the honey flow except, of course, that the feeders should not be full. In other words an abundance of empty comb is what is necessary to take care of the large amount of thin nectar that may be gathered.

The California State Beekeepers' Association is certainly up and doing. We should all do our part to help in their campaign to secure 2,000 members within the next six months. This association is going to be of great benefit to us. It must be strong in membership in order to do the most for us that it can. It is really up to ourselves as producers to bring this about. Active members are the ones that count; such members interest their neighboring beekeepers in their organization, and when we keep up our enthusiasm we achieve results.

Big Sur, Calif.

M. C. Richter.

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**In Southern California.**—The season seems to be slow and backward. The orange trees are

showing a slight swelling of the buds, and it now looks as though it might be well toward the last of April before much bloom will appear. I find from my records that it is often the 12th or 15th of April, and sometimes later, before the bees begin getting honey from the orange blossoms. We are apt to forget and think a season exceptionally late, when perhaps it is not much different from the average. When it does turn warm, trees and plants will grow and blossom very fast, and it is well to have plenty of supplies on hand to care for a busy season.

The sages are making a good growth, and the wild buckwheat looks thrifty. But it is too early to tell much of the blossoming qualities of the plants, as the long, slender stems that support the blossoms shoot out very quickly and usually show little or no growth before the early part of May. Other plants are also showing up well. The alfalaria has been blooming for some weeks, but the cool weather has prevented the bees from doing as well as they might, considering the amount of bloom there has been. The willows in some sections have given remarkable results, and in locations where there have been plenty of willows and the bees have had sufficient stores, they have built up well. Where there was no early pollen, the bees did not build up; and some colonies with as much as 50 pounds of honey are very weak and have very little brood. However, generally speaking, it looks as though nothing but a very hot period of weather can keep the honey crop from being satisfactory to the beekeepers.

On a cloudy, cool day I observed 26 bees per minute entering the hive of the average colony. Upon opening the hive I learned that those colonies averaged four and five frames of brood, while those with a less number of bees flying in had only from one to three frames of brood. A little observation along these lines might enable one to secure a fairly accurate idea of the condition of the apiary. By examining only a few hives, and then observing the others from the outside, one might avoid the necessity of disturbing the bees by opening the hives during unfavorable weather.

The weather has been too cold and cloudy for the rapid building up of colonies. Around the orange sections it looks as though not over 50 per cent would be in prime condition for the orange flow.

Considerable disease—especially European foul brood—is showing up in many apiaries. There is nothing quite like a good honey flow to help eradicate these conditions. The winter loss has been quite heavy in many cases; but, as old Adam Grimm once said, "I save all of the combs and I show you how quickly I fill all of those hives again when the honey flow comes."

Corona, Calif.

L. L. Andrews.





## FROM NORTH, EAST, WEST AND SOUTH



**In Arizona.**—The spring season in southern Arizona has been unusually backward and at present (April 4) is from two to four weeks behind its usual condition for this time of year. In view of the fact that February precipitation was scanty, not giving spring annuals a good start, the prolonged coolness has been rather beneficial to beekeepers, tending to retard brood-rearing and consequent consumption of stores to some extent. In the meantime nectar conditions have somewhat improved, owing to more satisfactory March rains. On March 12 Tucson had the surprising experience of having some five or six inches of snow on the ground, while higher points had somewhat more. A fine rain also fell on April 1-2. This moisture has resulted in the production of small wild flowers which, it appears, will be sufficient to carry strong colonies through to the mesquite-catsclaw honey flow without feeding.

Filaree or alfilaria (*Erodium cicutarium*), a member of the mustard family (*Lesquerella gordonii*), and a form of waterleaf (*Phacelia arizonica*) are in large part furnishing a living for bees in southern Arizona. Fortunate this year is the Arizona apiarist in whose vicinity the filaree has become established. A trip overland from Tucson to Yuma (April 2-3) revealed the fact that the deserts to the southwest are even better supplied with small wild flowers of many kinds this year than is the region of Tucson. Orange and other citrus trees are in full bloom at Yuma, though the area devoted to them at present is too small to be an important factor for any considerable number of colonies. Mesquite, which should be in blossom now at Yuma, is just coming into full leaf.

By the time this reaches its readers the mesquite-catsclaw honey flow will be on at the lower altitudes, and near at hand at the level of Tucson, and if any southern Arizona beekeepers are unprepared for it, they will likely miss a good surplus.

Tucson, Ariz. Chas. T. Vorhies.

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**In Oregon.**—Winter losses have been unusually heavy in Oregon this year, due to the fact that bees went into winter light in stores and the winter was unusually long and confining. Spring vegetation is close to three weeks late. The willow honey flow started the first week in February in the southern Willamette section. The honey flow from Oregon maple will probably be at least two weeks late.

More large beekeepers are beginning to pack for the winter on the west side. The past winter has demonstrated to many that this is the desirable thing to do. The large hive is also becoming more popular.

The annual meeting of the Oregon State Beekeepers' Association was held at Pendleton, January 26 and 27. Although the at-

tendance was small, much important work was accomplished. Probably the most important step taken was the joining of the American Honey Producers' League and the sending of a delegate in the person of J. Skovbo of Hermiston, Ore., to the Salt Lake City meeting. Steps were also taken to revise the state foul brood law, which is of the antiquated county type. A. J. Sanford of Redmond, ex-president, was appointed as chairman of the committee on legislation. This committee will also have charge of the movement to secure a compulsory grading law, similar to the Wisconsin law.

At the request of the state association the extension service of the Agricultural College will issue a circular news-letter to the beekeepers interested. These letters will be sent to members of the state and county beekeepers' associations and to all others requesting them.

Arrangements are being made for a series of field meetings throughout the Northwest. The following dates have already been set: June 15, Spokane and northern Idaho; June 17, Yakima; June 20, northwestern Washington; June 22, southwestern Washington; June 24, Portland district; June 27, southern Willamette district; June 29, central Oregon district; July 1, Hermiston district; July 3, Ontario district. It is hoped that other northwestern states will line up in the program and that several prominent men from the East will be in attendance. Time is allowed between the field meetings so that the visitors may have opportunity to look over the surrounding beekeeping sections.

Honey seems to be largely out of the hands of the producers but is moving slowly in the retail market. Prices remain approximately the same. H. A. Scullen.

Corvallis, Ore.

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**In Louisiana.**—The swarming season has come and is a thing of the past for this year in the southern portion of this state. March 14 I visited a beekeeper near Houma, La., and while in his apiary two swarms emerged from their hives and clustered in trees close by. Upon examining the inside of these hives I found over 50 pounds of new white clover honey in each super though there are 90 days more before the clover is killed by the warm weather, July being the usual time.

The white clover is very rank here now, in places averaging about eight inches high. Later in the season it sometimes grows to the height of twelve inches.

The tupelo gum in this locality is now spreading its beautiful light-green foliage. This tree produces a very bountiful crop of honey in a good season, and this season looks like one of the most favorable for the past four years.



## FROM NORTH, EAST, WEST AND SOUTH



Beekeepers further north in Louisiana should examine their hives at once, and ascertain if there is room in the supers to hold this big crop, which is sure to come. Order a full supply of fixtures at once from your nearest dealer. Pay a little more attention to your bees at this season, and you will find there is nothing else on the farm which will pay greater dividends for the small outlay of money invested than your bees.

Don't forget that the "penny wise and pound foolish" idea cuts deeper in the beekeeper's pocketbook than almost anything else. If you try to crowd your bees in one or two supers, you force them to swarm; while, on the other hand, if you give them ample room, the bees will pay you over and over again for your expense and trouble. Here in Louisiana in some localities a brood-chamber should have five supers over it, rather than only one, which is usually furnished. Try it out this season and find out how fast bees can make money for you.

Baton Rouge, La. E. C. Davis.

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**In Mississippi.**—Extremely favorable weather during March and early April has enabled colonies to build up to swarming strength from the Gulf Coast to the Tennessee line. The early-blooming honey plants, wild plum, redbud and fruit trees have secreted nectar abundantly, and the later-blooming plants are in such excellent condition that nothing short of a hard freeze or excessive rains will prevent beekeepers in this state from making a bumper crop. A red-letter warning, reading "Beware of Swarming," should be handed each beekeeper down here, for such weather is extremely conducive to swarming and swarming is ruinous to early honey crops.

Young queens and a hive-body of honey above the brood-chamber are cheap winter insurance in Mississippi. The package bee-men know this and practice it. Their colonies are so heavily populated now that I'm sure packages will be cheerfully put up with gospel measure. And remember, Mr. Northern Beekeeper, our thorough inspection service assures you that bees from Mississippi are free from foul brood. R. B. Willson.

Agricultural College, Miss.

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**In Florida.**—The last two weeks in April to the first week in May is the best period for requeening in this part of Florida. At this time the palmetto is trailing out to the end of its bloom, the coral sumac and sea grape are through for the year, and the black mangrove is just beginning to open its first buds here but will not be at its best until around the first of June. There is a period just at this time, that varies from year to year, of three to six weeks, during which there is very little nectar coming in.

The old queens slacken in their egg-laying, and many show signs of failing. This slackening in the brood-rearing just at this time means that many colonies will go into the best part of the mangrove flow weak in field bees, and the best days of the crop will be past before the field force is back to full strength again. A young laying queen introduced at this time will speed up egg-laying and bring the colony up to the mangrove flow in good strength of bees of just the right age.

If the beekeeper is prepared to take advantage of these six weeks preceding the mangrove bloom, he can have two colonies ready to gather the crop from mangrove where he had one for the palmetto. The colonies have all reached the swarming condition on the spring flow, and, if the beekeeper is provided with young laying queens, he can divide his colonies, and the young queens will boom them along, during this period of little flow, into better colonies than the old colonies would have been with old queens.

Queens wear out much faster in this climate than in the North and many develop into drone-layers before the end of their first year. Occasionally a queen will develop into a drone-layer in a few months, but this is due to poor mating, possibly with a drone reared in a worker-cell from some drone-layer.

We enjoyed a visit recently from the State Apiary Inspector and his assistant, J. C. Goodwin and Chas. A. Reese, who were on an inspection tour of this section of the state. They said that they had found no disease in this part of the state. Florida enjoys an almost complete freedom from infectious bee disease, and, with the few centers of infection being rapidly cleaned up, it will not be long until this state will be entirely free from American foul brood.

C. E. Bartholomew.

Key Biscayne, Fla.

\* \* \*

**In Southern Indiana.**—In many respects the coming season holds great promise, but in some respects it does not. The winter has been a fair average of our southern Indiana winters. There was considerable weather when the thermometer registered 10 or 15 above zero, the coldest being 3 above. This condition kept the bees contented and they remained in their hives most of the time, although there were plenty of warm days for them to take cleansing flights. The weather gradually warmed up about the first of March so that brood-rearing began a little later in a normal manner. In my own colonies, brood-rearing began the latest in the season that I have ever observed it. Most colonies containing eggs only about March 15. I am not sure whether this was caused





## FROM NORTH, EAST, WEST AND SOUTH



by the cool weather before that time, or that it was due to the fact that, as the colonies were short of stores in the fall, they were given large quantities of sugar. It is possible that, due to the fact that they had little pollen in the hives, they waited for pollen this spring before beginning brood-rearing. At any rate, the colonies have come through in fine shape and seem contented with the sugar stores, and, as the soft maples come on with their pollen, the bees are gathering it at a great rate and brood-rearing is coming on with a rush. I believe they will be stronger for the honey flow than they have been when they began brood-rearing earlier. Time will tell. At this date, April first, plum blossoms are creeping out and the pear buds and the peaches are swelling, so that the season looks good for normal brood-rearing. So much for the favorable conditions. Now for the unfavorable ones. In many sections near here the fall crop was a failure. In some cases the bees got a little from Spanish needles and in others a slight stimulative flow from smartweed. This caused them to fill the hive with brood, and winter found the hives full of bees but short of honey. If the beekeeper was on the job and supplied them with stores, they are in fine condition; but if he did not, about 25% are dead at this time from starvation and another 25% will die between now and the time of our honey flow, the latter part of May. So I wish to sound a warning, and I wish *Gleanings* would print it in large letters with red ink. **EXAMINE YOUR BEES AT ONCE** and, if they have not three or four combs packed full of stores from top to bottom, **FEED** or the bees will starve.

Vincennes, Ind.

Jay Smith.

\* \* \*

**In Pennsylvania.**—Bees have wintered fairly well. Those in cellars have not fared quite as well as those outside in good packing cases. Several reported taking bees out of cellars in early March because of dysentery. Many of these cellars are too cold.

Late honeydew and aster honey are reported to be the causes. Because of these bad foods gathered in late summer most of the bees in the state would winter much better if fed 15 pounds of granulated sugar after brood-rearing is over.

The usual heavy winter loss and weak colonies have occurred among neglected bees. Such bees cannot be made to yield a good honey crop. However, the beekeeper will be well repaid in supplying plenty of food to colonies which are short, giving needed breeding room for the queens, providing protection for the hives and replacing all failing queens. The plan of wintering in two-story hives, the upper one full of honey, a good packing case and good queens reared

in the previous August, has proven its worth this winter. Colonies thus prepared are in fine condition. This plan solves the winter and spring and European foul brood problems, and gets a big honey crop.

Nectar-bearing plants of all kinds are in splendid condition. Most of the state had an abundance of rain last summer and fall. No winter-killing is apparent and spring is advancing slowly. All this is favorable to a good honey crop this year. Most of the nectar will go to waste because of the lack of bees to gather it.

Numerous inquiries indicate a lively interest in the new law making it a misdemeanor to keep bees in anything but movable comb hives after July 1, 1923. After that date a penalty is attached to keeping bees in hives that will not permit the inspector to take out freely the combs for examination. The object of this law is to reduce the danger from American foul brood.

Thousands of box hives in the state should be transferred in order to make the bees profitable to their owners. Geo. H. Rea.

State College, Pa.

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**In Iowa**—Our bees went out of the cellar March 15, earlier than usual, but owing to the uneasiness of the colonies it was thought best to put them out. This condition has been happening altogether too frequently in late years, and is an unexplainable circumstance as far as we are concerned. We never have wintered a bee other than in this cellar as long as we have been beekeepers, which is close to 20 years.

We have held the bees in this cellar until April 15, and had them no more uneasy than they were this year a month earlier. The past three years they have consumed more stores than usual, which I cannot account for. However, we noticed a row of bees, which were in a measure isolated from the rest, being more quiet and the winter mortality not being so high, and wondered if we were not crowding our bees too closely in the cellar. The rows are piled five high, with a space of two or three inches between piles. Then comes a two-foot alley and another row piled facing the other row. If a few colonies happen to get a little uneasy it is possible they might stir up the others. Who knows?

If the beekeepers in this part of Iowa do not keep a close watch, they will lose heavily in bees, as well as having what colonies do pull through far too weak for the clover flow. Bees will have to have the attention of the apiarist this spring if they make good on the flow, which usually starts about June 1.

The ground is soaked and has been ever since last fall. The clover is starting nicely and appears to have come through the winter well notwithstanding the ground was



## FROM NORTH, EAST, WEST AND SOUTH



bare all winter. We were just a little pessimistic about coming through, as we had some very soft weather, as well as some cold enough to send the frost down about four feet, and the ground bare of snow.

Center Junction, Iowa. W. S. Payburn.

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**In Wisconsin.**—The indications are that the beekeeping situation in Wisconsin is normal plus. There has been very little snow in the southern part of the state, but the clover does not seem to have been seriously injured. Most of the beekeepers with whom we have talked seem to feel that their bees are in unusually good condition. Few bees have died from dysentery, and the losses are due mostly to starvation. Bees wintered out-of-doors have used an unusually large amount of stores, presumably because of the mild weather.

The situation in the northern part of the state is even more favorable than in the southern part. The entire northern section has been covered with a blanket of snow to a depth of several feet, and, as a result, the bees wintered out-of-doors have had excellent protection.

The clover should be in excellent shape due to the heavy snow fall and subsequent protection from periods of freezing and thawing. A cold spell of about a week's duration occurred the latter part of March, which held the buds back in the southern part of the state and also to some extent the development of the bees. As brood-rearing began quite early and the bees had no opportunity to get pollen in the field, there is some chance that a good many colonies have been reduced by spring-dwindling on account of being unable to rear brood as fast as the old bees died off. If the bees have been given proper protection during April and we have a little well-timed rain in the summer, this should be a banner year for Wisconsin.

In spite of the low price of honey, the interest in beekeeping does not seem to be lacking, and quite a number of new beekeepers are making a start. The attendance of beekeepers at local association meetings during the winter has been very good and the spirit of co-operation seems to be increasing. More and more of the Wisconsin beekeepers are becoming interested and are making an effort to do some advertising.

Madison, Wis.

H. F. Wilson.

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**In Ontario.**—The latter end of March was colder than the first two weeks of the month here in Ontario; and possibly that condition was better for the bees than if the weather had been warmer, as vegetation was held back, lessening danger from frosts at a later date. Speaking generally for Ontario, based on reports from

many parts of the province, I would say that prospects are above the average, so far as clover is concerned. Last year clover made a rank growth and, from what I can learn, the strong root growth saved the plants even in localities like our own here in York County where there was but little snow all winter.

I have just returned from a visit to our Simcoe County yards where the clover has been covered well all winter. The clover and wheat just uncovered appear about as green as they did last fall. As to the bees, judging from our own apiaries and from reports from others, they have also wintered above the average. While at the Simcoe County yards I made a superficial examination of each colony, being concerned only as to whether stores were present in all cases. Among the 300 colonies there, not a single one that had been normal last fall is dead. About a half-dozen hives were without any live bees; but an examination showed that the colonies had been queenless last fall when packed for winter, as the hives were heavy with honey, very few dead bees were in evidence, and there were no signs of brood. This may seem like an evidence of carelessness—packing away a few queenless colonies in the fall, but I am free to confess that it happens each season. Running a large number of bees is a different proposition from confining one's attention to a single apiary, and, in our case at least, we always expect a few things like I have just mentioned, to be charged up to profit and loss.

Last week I was in Toronto and while there I made inquiries as to the condition of the honey market. I found little evidence of much honey in hands of dealers, and one well-known handler of honey told me that the demand was then the best that he had experienced since last year's crop came on the market. With the market well cleaned up of old honey, at least one factor is favorable to the disposition of the crop we hope to produce this year. With bees wintering well and prospects good for clover, perhaps we might need the aid of the proposed co-operative association earlier than some of us have believed. Latest reports from Secretary Millen of Guelph informs me that a charter is being taken out and the beekeepers of the province will have an opportunity to subscribe for stock before this year's crop is harvested.

Two cars of package bees and nuclei have been ordered by the Ontario association for the benefit of its members. These cars are to arrive about May 1st. In addition to getting the bees for members of the association, Secretary Millen and his staff are also handling supplies and containers for the members.

Markham, Ont.

J. L. Byer.



## HEADS OF GRAIN FROM DIFFERENT FIELDS

**Double Brood-chambers for Spring.** I use 10-frame equipment and follow the two-body

manipulation as early in the spring as possible. A great deal of emphasis should be placed in giving the bees all of the winter stores they can use. In my locality a 10-frame hive will have to weigh 65 pounds at the beginning of the wintering period. If, therefore, these colonies are provided with sufficient stores early in the fall and given extra room the first thing in the spring, they build up quickly into larger and energetic producers. Of course, the bees must be wintered well.

No one can quarrel with Mr. Stahlman at Knox, N. Y., a photo of whose splendid apiary was shown in July Gleanings. His record speaks for his management. However, in my own beekeeping, I have tried to avoid as much as possible the clustering of bees on the outside of the hives. We must keep

attention to the plans I have mentioned above. I have found that this equipment enabled me last season to average considerably over 200 pounds per colony, spring count, in a season which was only average. From my experience in the last three years, careful observation and such investigation as I have been able to make, I am inclined to believe that an average of at least 200 pounds is possible over a period of five years, if the plans mentioned above are carefully followed.

Scotland, S. Dak.

O. G. Borton.

**A New Way of Equalizing Colonies.** A splendid way to help backward colonies which have not worn-out queens in spring: Place an excluder

board which has four additional  $\frac{3}{8}$ -inch cleats nailed around the edges, underneath, which makes an additional space above the frames on all colonies from which you



O. G. Borton secures enormous colonies in standard hives by the two-brood-chamber plan. He expects to average 200 pounds per colony by this management.

all of the bees working all of the time. I have laid great emphasis on what Mr. Pettit has termed the "Morale of the Hive," and I find that nothing is more inclined to make a colony balky than to allow clustering.

My success in swarm prevention I lay to the fact that I try to keep all of the bees busy by allowing a great sufficiency of room not only to the queen but the young bees and field bees as well. The last season I cut no queen-cells and had but two swarms in an apiary of 80 colonies.

For our use the 10-frame equipment is more satisfactory, although I believe that without the two-body manipulation it would not be entirely successful. By careful at-

tempt assistance in the way of drawing young bees. As these colonies become strong you will find the young bees clustering under the board in this extra space. All the young bees like to cluster in this warm space. Simply remove the board with its cluster of young bees and dump in front of the hive needing help. No danger of losing queens this way in either of the colonies, and the bees "stay put." This method surpasses shaking bees (old and young) from combs and sometimes the queen or adding combs of brood. It is safe, sane and simple. Don't draw from the strong too near the honey flow.

J. H. Fishbeck.

St. Louis, Mo.

THE American Honey Producers' League has accepted the generous offer of Colin P. Campbell, Grand Rapids, Michigan, to compile and make a digest of all the court decisions affecting beekeeping and the legal questions arising from beekeeping. Mr. Campbell has offered to do this work without compensation, asking only that the cost of clerical work be paid. The work will be published in booklet form and sold to beekeepers. The League is now requesting donations from beekeepers and dealers in honey to help pay the cost of publishing this work. It is estimated that it will cost about \$500 to publish it. Donations for this should be sent to the secretary of the American Honey Producers' League, P. O. Box 838, San Antonio, Texas.

In the preliminary report of the American Honey Producers' League from which the financial statement published in this journal in the March issue was taken, one important item was omitted, perhaps through modesty on the part of the genial and energetic secretary. The item was that of \$2400 for the salary of the secretary for 1921, which has not been paid. The secretary was employed by the executive committee on a basis of \$200 per month.

The Colorado State Agricultural College, Fort Collins, Colorado, reports an enrollment of 62 students taking the course in beekeeping.

The directors of the Idaho-Oregon Honey Producers' Association have decided to close their office and warehouse at Caldwell, Idaho. The business will be transferred to Parma, Idaho, and placed in the hands of the director of that district. All communications to the Association should be sent to Parma, Idaho.

The A. I. Root Co. of California, now owned and operated by the Boyden Bros., has just arranged to handle the bee supply interests of the Miller Box Co. of Los Angeles. While Milton Metzler, owner and general manager of the Miller Box Co., retains a financial interest in this work, he is now able to give his entire attention to his growing business in sash and doors.

An international congress of beekeepers has been called to meet at Marseilles, France, Sept. 18-21, 1922. Beekeepers of the world are asked to send delegates to this meeting. No doubt many American beekeepers and instructors in beekeeping will want a personal membership, even though they have no thought of attending the meeting.

## JUST NEWS

Editors

gium. The Secretary of Publicity is P. Prieur, Place Ste-Croix, Poitiers, Vienne, France.

The fee for personal membership is 10 francs and for national, state or local associations 50 francs, payable to L. Tombu, 26 Rue D'Angleterre, Huy, Belgium.

Prof. R. Owen Wahl of the Grootfontein School of Agriculture, Middelburg, Cape, Union of South Africa, who is spending several weeks in the United States studying entomological problems spent a week at Medina to study American beekeeping methods and equipment. Prof. Wahl is doing this in order to fit himself better for his work in teaching in South Africa.

The Mid-West Horticultural Exposition, which is to be held at Council Bluffs, Iowa, in November, will have one of the most extensive and attractive exhibits of honey and wax ever shown in this country, judging from the movement now under way to increase further the cash prizes offered to exhibitors. The association has offered prizes amounting to \$600, and it is expected that this amount will be increased by at least \$200 more. The association expects to attract exhibitors from Pittsburg to the Rockies.

The three new bulletins on beekeeping, which were announced in our February issue, page 74, were in some manner unexpectedly delayed in the Government Printing Office, so that many were disappointed in not receiving promptly the copies they asked for. These bulletins are Farmers' Bulletin 1251, "Beekeeping in the Clover Region"; Farmers' Bulletin 1216, "Beekeeping in the Buckwheat Region," and Farmers' Bulletin 1222, "Beekeeping in the Tulip-tree Region." They are now being distributed and can now be had free by writing to the Bureau of Entomology, Washington, D. C.

The American Honey Producers' League, through its schedule committee, is continuing its efforts to arrange a national schedule of consecutive beekeepers' meetings, and the committee has sent out a series of questionnaires to all of the state associations. Any secretaries of state associations who have not received this questionnaire should write to H. F. Wilson, University of Wisconsin, Madison, Wis., and give information as to the time of the year when meetings are held and whether or not your association would like to be included in the schedule of the American Honey Producers' League.



## WHO'S WHO IN APICULTURE

We have again corrected our page of "Who's Who in Apiculture," bringing it down to date as of April 1. This page should be kept for reference so that inquiries regarding brood diseases or general questions on beekeeping can be sent to the proper official in the respective states. In those states where beekeeping is taught in the State Agricultural College, beekeeping questions of a general nature can be sent direct to the instructor in beekeeping at the college.

State or Province	Beekeeping Taught in Agri. College	Foul Brood Law?	Net Weight Law?	State Inspector.	Secretary State Association.
Alabama.....	Yes	No	No	None.	M. C. Berry, Montgomery.
Arizona.....	Yes	Yes	Yes	Don C. Mote...Phoenix City	G. H. Frizzell, Tempe.
Arkansas.....	Yes	No	No	None.	J. V. Ormond, Elba.
Brit. Columbia...	No	Yes	Yes	W. J. Sheppard.....Nelson	W. J. Sheppard, Nelson.
California.....	Yes	Yes	Yes	County System.	C. D. Stuart, Oakland.
Colorado.....	Yes	Yes	No	N. F. Boggs.....Fort Collins	None.
Connecticut.....	Yes	Yes	Yes	Dr. W. E. Britton, New Haven	L. S. Burr, So. Manchester.
Florida.....	Yes	Yes	Yes	J. C. Goodwin....Gainesville	R. H. Fryer, Sumatra, Fla.
Georgia.....	No	Yes	Yes	S. V. Brown.....Boxley	L. C. Walker, Alma.
Idaho.....	Yes	Yes	No	W. H. Wicks.....Boise	P. S. Farrell, Caldwell.
Illinois.....	No	Yes	No	A. L. Kildow.....Putnam	M. G. Dadant, Hamilton.
Indiana.....	Yes	Yes	Yes	H. N. Wallace....Indianapolis	C. O. Yost, Indianapolis.
Iowa.....	Yes	Yes	No	F. B. Paddock.....Ames	F. B. Paddock, Ames.
Kansas.....	Yes	Yes	No	Dr. J. H. Merrill, Manhattan	O. F. Whitney, Topeka.
Kentucky.....	Yes	Yes	No	H. Garman.....Lexington	H. Garman, Lexington.
Louisiana.....	No	No	No		E. C. Davis, Baton Rouge.
Maine.....	No	Yes	Yes	G. A. Yeaton.....Augusta	F. L. Mason, Mechanic Falls.
Manitoba.....	No	Yes	No	L. T. Floyd.....Winnipeg	L. T. Floyd, Winnipeg.
Maryland.....	No	No	No	G. H. Harrison, Jr., College Pk	Prof. E. N. Cory, College Park.
Massachusetts.....	Yes	Yes	Yes	B. N. Gates.....Boston	Miss J. Morse, So. Lancaster.
Michigan.....	Yes	Yes	Yes	B. F. Kindig.....Lansing	R. H. Kelty, E. Lansing.
Minnesota.....	Yes	Yes	Yes	C. D. Blaker....Minneapolis	O. L. Wille, St. Paul.
Mississippi.....	Yes	Yes	No	R. W. Harned...Agri. College	R. P. Dunn, Greenville.
Missouri.....	Yes	Yes	No	None in operation.	Miss Nina Scott, Clinton.
Montana.....	Yes	Yes	Yes	R. J. Kleinhesselink, Hardin	A. W. Strickland, Big Timber.
Nevada.....	No	Yes	No	Geo. G. Schweis.....Reno	L. D. A. Prince, Reno.
New Brunswick...	No	Yes		H. G. Miller.....Fredericton	H. G. Miller, Fredericton.
New Hampshire...	No	No	Yes		J. R. Hepler, Durham.
New Jersey.....	No	Yes	Yes	E. G. Carr.....New Egypt	E. G. Carr, New Egypt.
New York.....	No	Yes	Yes	Geo. G. Atwood.....Albany	O. W. Bedell, Earlville.
North Carolina...	Yes	No		None.	J. E. Eckert, Raleigh.
Nova Scotia.....	Yes			W. H. Brittain.....Truro	
Ohio.....	Yes	Yes	Yes	E. C. Cotton.....Columbus	Prof. J. S. Hine, Columbus.
Oklahoma.....	Yes	Yes	No	R. L. Blackwell...Lexington	H. G. Howard, Wewoka.
Ontario.....	Yes	Yes	No	F. Eric Millen.....Guelph	F. Eric Millen, Guelph.
Oregon.....	Yes	Yes	Yes	County system.	H. A. Scullen, Corvallis.
Pennsylvania.....	No	Yes	Yes	C. N. Greene.....Harrisburg	C. N. Greene, Harrisburg.
Prince Ed. Island	No	Yes	No	H. Newson....Charlottetown	None.
Quebec.....	Yes	Yes	Yes	C. Vaillancourt....Quebec	J. A. Prud'homme, St. Philom.
Rhode Island.....	No	Yes	Yes	Prof. A. E. Stene...Kingston	E. D. Anthony, Barrington.
South Dakota....	Yes	Yes	Yes	L. A. Syverud.....Yankton	Mrs. L. B. Slade, Mitchell.
				E. W. Fox.....Fruitdale	
Tennessee.....	Yes	Yes	Yes	I. M. Heatherly...Knoxville	G. M. Bentley, Knoxville.
Texas.....	Yes	Yes	Yes	M. C. Tanquary, College Sta.	Miss A. Hasslbauer, S. Antonio.
Utah.....	Yes	Yes	Yes	D. H. Hillman, S. Lake City	F. B. Terriberry, S. Lake City.
Vermont.....	No	Yes	Yes	E. G. Brigham....Montpelier	E. W. Larrabee, Shoreham.
Virginia.....	Yes	Yes		None.	W. J. Schoene, Blacksburg.
Washington.....	Yes	Yes	Yes	B. A. Slocum.....Pullman	C. E. Starkey, Prosser.
W. Virginia.....	Yes	Yes	Yes	M. K. Malcolm....Charleston	W. C. Griffith, Elm Grove.
Wisconsin.....	Yes	Yes	Yes	Dr. S. B. Fracker...Madison	Mrs. M. A. Hildreth, Madison.
Wyoming.....	No	Yes	Yes		Oliver Hower, Basin.

United States—Investigation and Demonstration in Beekeeping, E. F. Phillips, Apiculturist; Bureau of Entomology, Washington, D. C.

Dominion of Canada—Investigation in Bee Culture, C. B. Gooderham, Dominion Apiarist; Central Experimental Farm, Ottawa, Canada.

American Honey Producers' League—H. J. Parks, Secretary; P. O. Box 838, San Antonio, Texas.

\* Beekeeping taught also in some other colleges and schools in Alabama, Arizona, Arkansas, California, Indiana, Iowa, Kansas, Maryland, Massachusetts, Ohio, Quebec, Tennessee, Texas, Virginia and West Virginia.

**Q**UESTION.—When should I give a second brood-chamber to build up my colonies in the spring, and when should I un-pack?

T. B. Stauffer.  
Ohio.

**Answer.**—This depends upon how strong the bees are in the spring and how rapidly they build up. The second story should be given as soon as or just before the bees need extra room. If the colonies have wintered well and are well supplied with stores, this should be early in May in your locality. It is well to leave the bees packed until the latter part of May, but it will be necessary to enlarge the entrances before that time to suit the needs of the colonies.

#### Swarming Out of Newly Hived Swarms.

**Question.**—Why should I have so much trouble to get my swarms to stay in the hive? I clipped the queen's wings so she had to stay, but she crawled out repeatedly until the swarm became utterly bewildered.

Frank Switz.

New York.

**Answer.**—Newly hived swarms sometimes swarm out because the hive is too hot or too small, and sometimes when no cause for their dissatisfaction can be found. If the hive is left near where the swarm clustered, apparently the returning scouts induce the swarm to leave and go to the new home which they have selected. For this reason the usual recommendation is that the hive be moved to its place in the apiary as soon as the swarm has entered or that the swarm be carried to the hive already located in the apiary. Swarming out because of discomfort can be prevented by placing an empty hive-body below the new brood-chamber for two or three days, shading the hive and providing complete ventilation. The empty hive ready to receive the swarms should be kept in the shade.

#### Prevention of After-swarms.

**Question.**—We placed the first swarm on the old stand to get all the field bees and moved the old hive away, but without success. Two more swarms came out. What caused the failure?

Illinois.

Geo. H. Froelich.

**Answer.**—If you moved the parent colony to its new location at the time you hived the first swarm, it is not at all surprising that they swarmed again. The parent colony should be left close by the swarm for six or seven days, then moved away with the least possible disturbance while the bees are working freely in the fields and preferably early in the afternoon while the young bees are out for a playflight. This robs the parent colony of most of its bees just before the young queens begin to emerge, making the colony too weak to swarm. If the parent hive is moved away at the time of hiving the prime swarm or even a few days later, it has time to regain sufficient strength to swarm. If the prime swarm was delayed

## GLEANED BY ASKING

Geo. S. Demuth

by bad weather, of course the parent colony must be moved away sooner; and if the prime swarm issued before any of the queen-cells were sealed, as some-

times happens especially with Italians, the parent hive should be moved away later. If the hive is moved away when the bees are not flying or if the colony is greatly disturbed in moving, it will not be sufficiently depleted to prevent after-swarming. This method of preventing after-swarms is difficult when the hives are close together in rows, but practically never fails when properly carried out.

#### The Use of Queen Traps in Swarming.

**Question.**—Is putting a queen trap on every hive during the swarming season a sure way to stop swarming or is a lot of super room sufficient to do this?

Charles Dalrymple.

New York.

**Answer.**—The queen trap does not prevent swarming. It catches the queen when the swarm issues, and thus prevents the swarm from leaving and makes it easy to hive the swarm. Plenty of super room at the right time and in the right place greatly helps in reducing swarming but does not always prevent it, especially if comb honey is being produced.

#### Clipping Queen of After-swarm.

**Question.**—We have a colony of bees that swarmed twice this season; so we clipped the queen's wings, that they might not swarm again. They do not seem to work so well as they did. What can be wrong with them?

New York.

M. E. Copeland.

**Answer.**—If you clipped the queen's wings soon after the second swarm issued, you probably did this before this young queen had taken her mating flight. This would result in listlessness and finally in the dwindling and death of the colony, unless you supply them with a queen later. The colony could not raise another queen at that time, for they have no larvae from which to raise one. Of course, the bees may have quit working so well because the honey flow is over.

#### Increase Without Reducing Honey Crop.

**Question.**—How can I double the number of my colonies this season and not impair my honey crop?

John Smail.

Quebec.

**Answer.**—Although your question sounds like a paradox, there are conditions under which increase can be made without decreasing the honey crop, sometimes even increasing it; but, as a rule, increase is made at the expense of the surplus honey. In localities having a relatively late honey flow, such as the buckwheat region, some parts of the alfalfa region, and in some of the southern states, the colonies can sometimes be divided six weeks before the main honey flow, resulting in practically doubling the crop



of honey. Such a procedure in localities having an early honey flow, such as the clover region of the North, would, of course, result in a greatly reduced honey crop. In such localities increase can be made at little expense at the close of the main honey flow, thus utilizing the bees that came on too late to take part in gathering the crop. This would, no doubt, be the best time to make increase in your locality.

#### **Difference Between Swarming Cells and Supersedure Cells.**

Question.—How can one distinguish between the preparations for superseding and for swarming?  
J. B. Stuyvesant.

California.

Answer.—In the case of supersedure, the general appearance of the brood and the condition of the colony usually reveal some indications that the queen is failing, scattered brood being one of the chief symptoms. Fewer queen-cells are built for supersedure, often only one or two being built at first, then a few others started later, so that the few supersedure cells vary greatly in age. For swarming many queen-cells are started at nearly the same time. The strength of the colony and the amount of brood should also be taken into consideration. It must be remembered that when supersedure cells are started during the swarming season, swarming may follow, even though the apparent motive in building the queen-cells was originally only supersedure. Sometimes even comparatively weak colonies will swarm as a result of the presence of supersedure cells during the swarming season.

#### **Uniting Previous to the Honey Flow.**

Question.—Just when and how should we double up colonies to make them strong for comb-honey production?  
Joseph Fekel.

New Jersey.

Answer.—If uniting is necessary to make the colonies strong enough for super work, this should be done at about the beginning of the main honey flow. It is much better to manage so that the colonies are strong enough when the honey flow begins, without uniting whenever this is possible. This can be done in most localities provided you know when to expect the main honey flow.

#### **When Further Swarming May Be Expected.**

Question.—If I take all the brood except one frame from every strong colony shortly before the honey flow, leave all the old bees and the queen in the hive on the old stand and move the old brood-chambers to a new stand, giving to each a young laying queen immediately, will there be any danger that either the parent colony or the swarms will swarm again the same season?  
Wisconsin.

Otto Saewert

Answer.—If the honey flow is long enough some of the artificially made swarms may swarm again the same season. The parent colonies treated as you describe will rarely swarm again the same season; but, if you wait ten days after making the artificial swarms, then destroy all queen-cells and introduce the young laying queen, the parent colonies are practically safe from further swarming the same season.

#### **Finding Clipped Queens in Swarming.**

Question.—If I clip my queens' wings, will I be comparatively safe in finding them somewhere within the yard after they swarm when I return in the evening?  
J. H. Sturdevant.

Nebraska.

Answer.—No. Many of them will go into the wrong hive when the swarms return. You will probably not find any queens on the ground when you return in the evening. Neither do the swarms always return to their own hive, especially if there are many colonies in the yard. Sometimes on returning, the bees of the swarm enter several hives, often many of them being killed on entering. Of course it is better to lose the clipped queens than to lose the swarms, as would be the case if the queens were not clipped when no one is present to take care of them. If you expect to permit swarming while away during the day, it will be better to put queen traps on all colonies that are liable to swarm if you desire to save the queens. It will be better still to examine each colony once each week during the swarming season to anticipate swarming, either swarming them artificially or taking away the queen when they can no longer be induced to go ahead with their work without preparing to swarm.

#### **Making Increase Previous to the Honey Flow.**

Question.—Will it be advisable for me to divide my colonies this spring, making two four-frame nuclei from each since I want increase?  
Pennsylvania.

S. B. Wage.

Answer.—If you depend upon buckwheat or other late-blooming plants for your surplus honey and do not have an early honey flow sufficient for surplus, it will be well to divide the colonies in the spring. This should be done in time to build both divisions up to full working strength in time for the main honey flow. Where the main honey flow comes early, as in the clover region, the division for increase should not be made until the close of the early honey flow.

#### **Requeening in European Foul Brood Treatment.**

Question.—What is the reason for recommending requeening in the treatment of European foul brood?  
J. G. Harmon.

California.

Answer.—Requeening in European foul brood treatment accomplishes two things, which are both important in the control of this disease. First, by killing the old queen and later giving a ripe queen-cell or a young laying queen, there is an interval of no egg-laying, which gives the hive workers an opportunity to clean out the dead larvae and polish the cells thoroughly before brood is again reared in them. The period of no egg-laying recommended for this is from 10 days to 27 days, depending upon conditions. Second, by replacing the old queens with young Italian queens of a strain which clean out the dead larvae more promptly and thoroughly, there is less chance of the disease's appearing again.

**W**HAT attention do the bees need during the month of May? That depends. In some parts of the country the greater portion of the season's

honey crop will be gathered this month. In these favored spots the beekeepers are now busy putting on empty supers as the bees need more room, taking off the supers filled with honey and, no doubt, struggling with the problem of swarm control. In other regions the honey harvest is still a month in the future, and in some cases even two months or more.

While one might expect the honey harvest to begin early in the South and move northward as the season advances, just as the wheat-harvest time sweeps northward from Oklahoma to North Dakota, such is not the case. True, there is a sweeping northward of the springtime development of the colonies of bees and the blooming of the first nectar and pollen-bearing plants of the season, but the honey harvest does not come until the bloom period of the plant or plants that furnish the main honey flow for the locality. In many localities the entire crop of surplus honey is gathered within a few weeks during the blooming period of some important nectar-bearing plant, the other nectar-bearing plants of the region being but minor sources. If one were to attempt to follow the honey harvest northward as the harvest hands of the Great Plains follow the wheat harvest, there would be a surprising amount of dodging about, sometimes north and sometimes south, as the season advances. One of the first things the beginner should learn, if possible, about his location is when to expect the main honey flow or honey flows of the season. This can usually be learned from some established beekeeper in the locality. In general, the bulk of the honey is gathered in April and May in the South, May and June in the middle latitudes; June, July, and in some places in August and September in the far North. It may come in March and April from orange blossoms in California, mesquite in Texas or tupelo in Florida; in April and May from gallberry in the South Atlantic states, the tulip tree in Virginia and Maryland, mountain sage in California or saw palmetto in Florida; in June and July from wild raspberry in New York, Michigan and Ontario, white and alsike clover in the great clover region of northeastern United States and eastern Canada, sourwood in the Carolinas, basswood in the North, sweet clover in the great sweet clover belt of the Missouri River region, alfalfa and sweet clover in the irrigated portions of the West or cotton in the South; in August from willow-herb or fireweed in Canada and a few of the

## TALKS TO BEGINNERS

Geo. S. Demuth

adjacent border states, buckwheat in New York and Pennsylvania; and in August and September from fall flowers in widely scattered localities. These

are only a few of the important sources of nectar.

### The Building-up Period.

Whatever the source of the main honey flow the amount of surplus that can be stored depends upon the amount of brood reared during the preceding six or eight weeks, since, other things being equal, the amount of surplus is proportional to the number of workers on the job during the honey flow. Weak colonies usually are not able to store much if any surplus.

Throughout the greater part of the United States and Canada, this month is the most important part of the building-up period. Wherever the honey flow comes on in June, the most important thing this month is extensive brood-rearing. If any thing happens to hinder brood-rearing in any way now, the possible number of young workers for June and July will be proportionately reduced. Many beginners and even some professional beekeepers fail to secure good crops of honey because of some error in the management this month.

### Greatest Danger from Lack of Stores.

Often the bees curtail brood-rearing because their supply of honey runs low. In order to rear the great horde of workers necessary for best results when the honey flow comes it is necessary that the bees be able to gather plenty of nectar and pollen from early spring flowers; that they have a large supply of honey stored in the hives or that they be fed about a quart of sugar syrup, made of equal parts of sugar and water, either daily or larger amounts of thicker syrup at longer intervals. In most localities the bees are able to gather all the pollen they need for spring brood-rearing, though in a few places brood-rearing is hindered from lack of pollen.

The safest condition for this important building-up period, so far as food is concerned, is an abundance of honey in the hives. Then, when a cold or rainy spell or a dearth of nectar comes, the bees can go ahead full speed with their brood-rearing. It is surprising how much honey is used for the heavy brood-rearing of spring. Sometimes frames filled with honey will be emptied within a few days and the combs filled with brood. Apparently it requires nearly a frame of honey to make a frame of brood, and, since strong colonies should have from eight to twelve frames fairly well filled with brood before the honey flow begins, the importance of an abundance of stores at this time can be appreciated.



There is an old saying in the clover region that, if the early flowers, such as maples, fruit bloom and dandelion, yield well, the honey crop from clover will be good; but, if the early flowers fail, the honey crop from clover will be poor. The up-to-date beekeeper refuses to surrender his chances of a honey crop when the early flowers fail, but feeds his bees lavishly when necessary during the building-up period. If beginners will see that each of their colonies has, at all times from now until the beginning of the honey flow, not less than 10 to 15 pounds of honey (enough to fill completely two or three standard frames), there should be no question about their building up to great strength in time for the honey flow, so far as the food supply is concerned. If frames of honey are not at hand, the bees should be fed unless they are gathering plenty from the flowers.

In order to learn what he can about the rapid consumption of stores when brood-rearing is carried on extensively, the beginner will do well to look into the hive about once a week until the honey flow begins, to note the amount of stores on hand.

#### When a Second Story Is Needed.

In many cases brood-rearing is hindered, just when the colonies should be raising the most, by a lack of room in the brood-chamber. Colonies that have wintered well, which have a good queen and plenty of food, often need more room before the honey flow begins, than a single standard 10-frame brood-chamber.

If extracted honey is to be produced, a second story should be given to all strong colonies this month, even in the far North, and the queen should be permitted free range through both stories. If this extra story contains a few frames of honey, all the better. If combs are not at hand for this second story, frames filled with full sheets of foundation should be used, but these should not be given until the bees begin gathering enough nectar to cause them to build out the comb. When they begin to whiten the upper portion of the brood-combs with new wax, they will usually work well on the foundation. When foundation is used in the upper story, two combs of brood should be transferred to the upper story and placed in the middle, two frames of foundation being put below to fill the space, one on each side, just beyond the last comb of brood. As soon as the bees draw out the foundation in the frames adjacent to the combs of brood in the upper story, they should be exchanged with a frame on which the bees have done no work, repeating this until all are built out. If the queen now establishes herself in the upper story, all the better; but, after she has been upstairs about three weeks, she should be put below again and confined there by a queen-excluder. At this time the upper story should be well filled with brood and honey; and, if at the beginning of the main honey flow, a third story should be given, this time lifting

some of the combs of brood into the third story if foundation is used.

If comb honey is to be produced the brood should be concentrated, and the second story should not be given unless needed to give enough room for brood-rearing, for the two-story hives must be reduced to one-story when the comb-honey supers are given at the beginning of the main honey flow. But even for comb honey, many colonies will need a second story several weeks before the main honey flow. In addition to furnishing room to rear more workers for the harvest, this extra room at this time goes a long way toward preventing swarming.

Sometimes the bees gather so much nectar from early sources that single-story hives become crowded with honey, thus restricting the work of the queen; but often such crowding is for a short time only, and the honey is used up rapidly as soon as the supply of nectar is reduced.

Sometimes colonies fail to rear enough workers for the harvest because the queen is old or worthless. While this can be remedied by purchasing a queen from the South to give to the colony in place of the old queen, it is scarcely advisable for beginners to do this; for, by the time the failing queen is discovered, it is often too late to secure another in time to build the colony up for the honey flow unless the main honey flow does not begin until July or August.

The two things of outstanding importance before the main honey flow are to see that the bees have a superabundance of food every minute of the time and that they have all the room they can use for brood-rearing. If the bees are not gathering more than they consume, they should be fed liberally unless they have 10 or 15 pounds on hand, and a little before more room is needed a second story should be given.

#### The Swarming Problem.

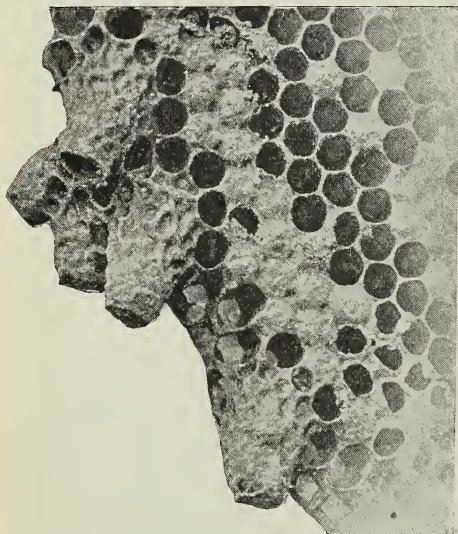
When the hives first become crowded with young bees, which in strong colonies sometimes emerge from their cells at the rate of about 3000 per day, swarming may be expected. In some parts of the South bees sometimes swarm in March and April; but in the North the swarming season comes in May and June, often extending into July.

Before the invention of the movable-frame hive, swarming was considered desirable, for honey was then obtained by killing some of the heaviest colonies in the fall; but, in modern beekeeping, swarming in some localities is one of the most difficult problems with which the beekeeper has to deal. If colonies are permitted to divide their working force by swarming shortly before, at the beginning of or during the main honey flow, the amount of honey secured is greatly reduced. Sometimes the honey flow is so short that it passes by before either the swarm or parent colony recovers sufficient strength to store surplus honey. It is only where the swarming season comes a month or two before the main honey flow,

so that both divisions can again become strong in time for the honey flow, that swarming can be considered desirable.

#### The Story of Swarming Briefly Told.

In preparation for swarming, the bees build several queen-cells, which can easily be seen usually along the lower edge of the brood combs. These are built singly or in clusters of two or three cells with the opening downward. They somewhat resemble a peanut shell in appearance. About the time the cells are sealed (about eight days after the egg was laid) the swarm issues, accom-



The queen-cells are the large ones at the left, somewhat resembling peanuts.

panied by the old queen. About eight days later the young queens begin to emerge, and, if not prevented, several after-swarms will issue, one coming out every day or two until the colony is so depleted that there are no longer enough bees to divide up among the young queens. Finally all but one of the remaining young queens are killed, the surviving one to become the new mother of the colony. If the bees are permitted to carry out this program completely, the splendid, strong colonies are ruined, so far as gathering an immediate honey crop is concerned.

#### How to Prevent Loss from Swarming.

If a swarm issues when plenty of room is given as previously described, the working force can be kept together, the work in the supers continued without interruption and after-swarming prevented by the following procedure: When a swarm issues look for the queen (if she has been clipped as advised last month) on the ground in front of the hive. When she is found put her into a small wire-cloth cage or queen-catcher and lay the cage with the confined queen in the shade. Move the hive from its stand, turning its entrance away from its former posi-

tion. Place a new hive where the old one stood, having frames with full sheets of foundation, and, if available, one empty comb. Transfer the supers from the old hive to the new (if extracting-supers, none containing brood should be transferred), put the covers on both hives, thrust the cage containing the queen part way into the entrance of the new hive and wait for the swarm to return and enter the new hive. They may return within a few minutes without clustering or they may cluster before returning. The old hive should be set far enough away so none of the returning bees will enter it, or covered with a cloth until the swarm has returned. When most of the bees have entered the new hive the queen should be released, care being taken that she goes into the hive.

If the queen is not clipped the hives should be arranged in the same way while the swarm is out; then when the bees have clustered the cluster can be shaken into a basket or light box, carried to the new hive and the bees poured out at the entrance, care being taken to start some of them into the entrance, when the rest will follow. If a queen and drone trap is used instead of clipping the queen, the procedure is similar to that for the clipped queen.

#### To Prevent After-swarming.

After the swarm has entered the hive and quieted down, the old hive should be moved back close beside the new one, but with its entrance turned away about a foot from the new hive. A day or two later it should be turned so the two hives are side by side, with their entrances close together.

On the seventh day after the swarm issued, choosing a time when the bees are working freely in the fields, preferably early in the afternoon if the day is fine, just when the most bees are flying in front of the hive, the old hive should be picked up and moved away to a new location for increase. This moving should be done so carefully that the bees are not disturbed so that none of them will note the change in their location when they go to the fields; and it should not be located close to other hives where returnings bees from another colony might enter it by mistake. When this is done the parent colony is so depleted of its bees just at the time the young queens are ready to emerge that it is too weak to send out an after-swarm, the field bees on returning all joining the colony on the old stand. When swarming occurs at the beginning of or during the honey flow, this plan is especially desirable. In this case the parent colony usually does not produce any surplus honey, but work in the supers on the new hives goes on without interruption. Colonies managed in this way usually produce as much honey as those of equal strength which do not swarm, and sometimes even more; for recently hived swarms, if satisfied, work with greater energy than other colonies.



THERE are two more remarkable answers to prayer; or at least they are remarkable and greatly encouraging to me. One Sunday evening, just as I had come in on foot from my Abbeville Sunday school, five miles away, an old friend said to me as follows:

"Mr. Root, a saloon is to be opened up bright and early tomorrow morning at the center of York. The man has got his wet goods in boxes, and is ready to put them on the shelves; and if anything is going to be done to stop it, it must be done this Sunday night; and I do not know of any one who will tackle such a disagreeable job unless it is you."

I was tired and hungry, and it was already snowing, and nearly dark. I got a hasty lunch; and with a prayer for strength, and wisdom as well, I started out with my umbrella. It was a trip of four miles, and there was so much snow on the railroad track that I had hard work to keep my feet on the ties. There was only one man in the little town of York with whom I was well acquainted, and he was a notorious skeptic. I called at his home, and he almost immediately began a tirade against Christians in general. He said something like this:

"Mr. Root, you Christians meet together and pass resolutions, perhaps appoint committees, and pray about it, and that is the last of it. You never *do* anything."

I listened as long as I could stand it, and then I said:

"There may be some truth in what you say, Mr. Van Orman; but how about you infidels? What do *you* do?"

"Oh!" replied he, "we go right to work and *do* things without all that folderol and rigmarole."

By the way, it occurs to me just here that my old friend, Rev. A. T. Reed, the boy preacher, once astonished his audience by saying in his opening prayer something like this:

"O Lord, we thank thee for our enemies, because they oftentimes tell us of our faults which our friends, especially if they are intimate friends, rarely do."

I have often thought of it since then.

After what I said to Mr. Van Orman, and he had replied, I took it up as follows:

"Mr. Van Orman, I am very glad indeed to have you tell me how unbelievers work, for you and I are going straight, this blessed minute, to do what we can to prevent Mr. ——— from opening up here in your quiet little town such a thing as has never been known,"



Let your light so shine before men that they may see your good works, and glorify your Father which is in heaven.—Matt. 5:16.

The effectual fervent prayer of a righteous man availeth much.—James 5:16.

Her price is far above rubies.—Prov. 31:10.

The above had the effect of completely turning the tables. He replied:

"O Mr. Root! I am sure you will do very much better if you go alone. Somehow it is out of my line. You are just the man for it."

He continued to object; but I declared that, after what he

had said, he was going up to where the saloon was to be started and introduce me, even if I had to take him by main strength. I got him up to the door, but I had to do the rapping; and when the man made his appearance I asked Mr. Van Orman to introduce me. We both went in and had quite a talk. The man and his wife, with two or three children, were present. They both resented my interfering, and all that I could do did not seem to change their opinions a particle. The man said he had got to do something to get the means to educate his children, and there seemed to be no other opening just then. Just think of it, friends—opening up a saloon as a means of educating the little ones of the household! My skeptical friend had but little to say, and I was about to give it up; but before leaving I said I would like to have them all kneel with me including Mr. Van Orman, while I asked the good Lord to guide us in the matter. My prayer was short, but I think it was something like this:

"O Lord, thou knowest how thy servant has labored to make this father and mother consider well the step they are about to take. Thou knowest how he seems to have failed entirely. Now may the Holy Spirit do what I have utterly failed to do, and make this father and mother realize what may be the effect in these growing children if the parents go on as they propose to do."

What do you suppose happened? As we arose from kneeling the mother was shedding tears. She stood up to her full height, and raising her hand, she pointed to her husband and said, "Sir, you know how I have objected to this whole undertaking from beginning to end; but you have coaxed and wheedled me into giving a reluctant consent. But I have changed my mind. The minute you open that store and begin selling that stuff to whosoever calls for it, that minute you and I cease to be *husband and wife*."

I am afraid, dear friends, that I laughed at the outcome. The husband turned on me and said, "Mr. Root, you pretend to be a Christian, and yet you come into my home

uninvited, and certainly not wanted, and make trouble between me and my wife. What sort of Christianity do you call that?"

Of course no separation followed. When the husband asked me what he was to do, I told him to send his stock of liquors back, with the explanation that his wife objected to his going into the business, adding that there would be no trouble.

By the way, friends, I got a glimpse from this incident of years ago of what might happen when the *mothers* of our land have something to say about making and enforcing our laws, especially those laws pertaining to the protection of our little ones. I have seen in my day many women that the world would call handsome; but I do not remember any other woman who impressed me as did that slender young wife as she with tears in her eyes raised her hand and issued what we might call an "emancipation proclamation" from the saloon business.

How about my skeptical friend who boasted that infidels go to work and *do* things without praying or singing hymns? Just as we got out of the door he was fairly bubbling over with enthusiasm at *my* method of doing missionary work. He said, almost in the language of my good old friend Daniel Wells, who had the jewelry store, something like this:

"Mr. Root, if this is religion, I will take stock in it, and I have not a word to say against it."

Right along in line with this, as illustrating what prayer may do when everything else fails, the following comes in well here. Some seven miles from my home there was a market gardener who worked hard and raised beautiful fruit and vegetables. But he was an intemperate man. Again and again he would load up a great wagon-rack of stuff and go to some town to sell it; and when the money was all in his pocket he would go into a saloon where the inmates would succeed in getting every dollar that his poor family needed for the necessities of life. Why is it that a man will toil early and late for weeks and months, and then let the saloon keepers rob him of his hard earnings? I happened to know that this man had gone to Medina with a load of stuff, including choice grapes, peaches and apples that

\* My good friends, let us stop and consider the above a little. In perhaps less than one hour of strenuous work I stopped the opening of saloons in that little town. There had never been one there before, and there has never been one there since. Not only the two or three children belonging to this man and wife, but the whole community for miles around, were saved from—who can tell what? Just that one little short prayer did it all. And what is to hinder doing this sort of prohibition work right here in our own land? And then consider my skeptical friend. I do not know whether he turned over a new leaf or not; but I was able to give him a demonstration of the power of prayer, which he had been ridiculing all his life, and I am sure it made him a better man if nothing more.

The effectual fervent prayer of a righteous man availeth much.—James 5:16.

he had worked hard to produce, and that once more he was obliged to confess to his wife and children that drink had taken it all. One of my mission Sunday schools was only a few miles from his home. I think I owned a horse and buggy of my own about that time, and so I drove over after Sunday school. As soon as I made known my errand the whole family resented it. They felt humiliated to have one who was almost an entire stranger call on them to get particulars in regard to it. The wife especially seemed pained and hurt, and I could get scarcely a word from her. As a last resort I asked if they would kneel with me in prayer. My prayer was something like the other one, and I asked the dear Lord to bless the outcome of my visit, even though it might have been ill-timed. To tell the truth, I had so little faith that I felt a great deal discouraged, and resolved I would not undertake such a task again. But it was one of my happy surprises, as I arose from my knees, to find both man and wife had been crying. The good woman broke down, and amid sobs told me of her troubles. Oh, what a woeful story it was! He had usually taken his crops to Cleveland; but the saloon-keepers had plucked him there so much that she persuaded him to go to Medina, but there the result seemed to be even worse. He finally began to confess; and before he finished he told me the whole story. After our four or five saloons in Medina had got him well "loaded" up they began borrowing money of him, and he lent it right and left, without taking a scrap of paper nor even knowing where it went. Finally, as he talked it over, he said something as follows:

"Mr. Root, the grand jury is now in session in Medina. I will go down bright and early tomorrow morning, and tell the story as I have told it to you."

He kept this promise. In the mean time one of the saloon-keepers who had taken the greater part of the forty or fifty dollars the man had received for his crop came forward; and after I had talked with him he owned up, but explained it by saying that he knew the poor man would lose every cent he had, and so he took it. He said he had planned to return it the next time he met him when he was sober. The result of that brief prayer was the breaking up of the saloon business in our town. Mr. Barber had caught every one of them red-handed, so to speak. It was not long before I received an intimation that, when I was starting Sunday schools and sticking to the Sunday school business, I was probably all right; but when I started out to make raids like the one mentioned above, on Sunday nights, I was away off, and I would get into a lot of trouble unless I "attended to my own business" and stopped meddling with things outside my province. The man who gave me the warning died only a short time ago; but before he died he came to



me and said, "Mr. Root, years ago I did not agree with you; but since that time great changes have taken place. I want to say to you before I die that you were right and I was wrong."

#### An "Apiary" in a Big Live Oak Tree Down in Florida.

"Bye-o-bye baby up in the tree top,  
When the wind blows, the cradle will rock;  
When the bough bends, the cradle will fall,  
And down goes bye-o-bye, baby and all."

Dr. Moore of Manatee, Florida, has the first apiary "up in the tree top" I ever heard of (see picture). There are ten hives on three platforms of different heights. So securely has he bolted everything to the solid oak that the "tropical hurricane" (see page 780, December issue) did not harm a thing, and the doctor himself was up in the tree during the storm. The windmill on top

laughing stock of many farmers who visited their office last winter and were shown a little sack of Hubam annual sweet clover seed for which they had paid the Henry Field seed house at Shenandoah \$150. The yield from this \$150 sack has turned the tables on the farmer friends who made fun of their buy. In the spring the canning factory bought 10 pounds of the seed at \$10 a pound with which they seeded 10 acres on their Mills County farm. This experiment proved a failure because of the fact that the seed was drilled in with acid phosphate, which killed the seed. It was then late, but they decided to make another effort and seeded 20 acres on the M. O. Allen farm southeast of Red Oak. From this planting they got a good stand on six acres and sold their seed from this crop recently for about \$1000. The Hays brothers planted the remainder of the seed, getting a good stand and yield. On Wednesday they sold a truck load of the clover seed from their crop, for which they received about \$1,750, and have about \$1,000 worth of seed still left, thus making about \$2,750 for the crop they received from a part of the \$150 sack of seed on 20 acres of land.—From Field's Seed Sense, March 22, 1922.



An apiary in a tree top.

is nearly 50 feet high and the platforms for the hives are something like 20, 30 and 40 feet up. There is a square board or platform large enough to carry a hive suspended by a rope at each corner, and this can be hauled by rope and pulley level with each platform. A windlass winds up the rope, and the Doctor, even if he is over 60, manipulates it all alone without any trouble. No big crop of honey has been secured so far, as we have had two rather poor seasons since the hives have been installed.

#### RED OAK FARMERS TURN THE TABLES.

Make Good Profit on "High Priced" Hubam Clover Seed.

Special to The Nonpareil.

Red Oak, Ia., Jan. 29.—Edward and Gordon Hays, real estate men and farmers, were the

#### COOKING BY ELECTRICITY.

A Wonderful Revolution in the Whole Business of Preparing our "Daily Bread."

I have for years past been appalled at the awful waste of heat, in all the appliances we use for cooking. A little heat reaches the food, but a far greater part goes up the chimney, or out in every direction into the air. With the new invention you don't light a match, you don't "burn" anything. A little heat, just enough to do the work, is sent right to the spot, then "bottled up" and kept there, on the principle of the "fireless cooker." The current from any common lamp socket for only 10 or 15 minutes (at a cost of a cent or two, according to what you have to pay for current) will cook many simple dishes, and keep them hot until meal time. There is no boiling over nor burning, for just as soon as the cooking is done, the new invention snaps off the current. The electric windmill works it beautifully.

For price and description write The Wm. Campbell Co., Detroit, Mich.

## Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

### REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

R. V. Stearns, F. E. Schriver, H. G. Quirin, G. O. Pharr, M. L. Nisbet, O. E. Milam, John J. Lewis, J. L. Leath, E. E. Lawrence, Allen Latham, R. S. Knight, Geo. A. Hummer & Sons, F. C. Gentz, John S. Field, R. V. Cox, P. C. Chadwick, J. D. Beals, Allenville Apiaries, Bruce Anderson, Siles Bee Supply Co., F. W. Summerfield, J. E. Wing, Edw. A. Winkler, Electric Wheel Co., Kitselman Bros.

### HONEY AND WAX FOR SALE.

FOR SALE—White tupelo honey, any quantity. Tupelo Honey Co., Apalachicola, Fla.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10-lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

OLA-FO-NY QUALITY buckwheat honey (liquid or crystal), 5-lb. pails, 65c, 15 to case, 2 60-lb. cans, \$12. Clarence Foote, Delanson, N. Y.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extra-choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—100 cases, 6 10-lb. pails each and 25 cases, 12 5-lb. pails each (60 lbs. net) of choice white alfalfa-sweet clover honey at \$6.60 per case in 10-case lots and upwards only. Sample, 25c. All f. o. b. Montrose, Colo. H. R. Fisher.

### HONEY AND WAX WANTED.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

### FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE—20 lbs. light brood foundation for Mod. Dadant super frames, 70c per lb. Weber Bros., Wathena, Kans.

NOVICE extractor, steam foundation-fastener and bees. What do you need? Paul N. Van Horn, West Falls Church, Va.

FOR SALE — "SUPERIOR" FOUNDATION. "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

FOR SALE—Medium brood foundation mill. Fair condition, 9-in. rolls. Price, \$50.00. The Henseler Apiaries, Marshfield, Wis.

PORTER BEE-ESCAPES save honey, time and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ROOT'S bee goods at factory prices. Everything for the beekeeper. Ask for catalog. S. M. Wilkes & Co., W. E. Tribbett, Asst. Mgr., Staunton, Va.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—Bargain in beehives, owing to death of owner. Large amount in flat. Honey cans, cases, etc. 165 S. Forest Ave., River Forest, Ill. Phone River Forest 2879M.

FOR SALE—One No. 5 Novice extractor, pockets 9 $\frac{3}{4}$  x 16 in., diameter, 17 in. Used one season. Is good as new. Sold reasonable. Write to Lawrence G. Springer, Ossian, Ind.

FOR SALE—25 cases of new 60-lb. cans, two cans in case, \$1.00 per case. Also 50 cases of picked seconds in good cases. No junk. 70c per case. Ray C. Wilcox, Odessa, N. Y.

FOR SALE—11 ten-frame Danzenbaker supers, used two years, newly painted, fences and section-holders new, \$1.85 each; 5 same except section-holders are somewhat discolored but never used, \$1.75 each. King's Apiaries, McArthur, Ohio.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

FOR SALE—Giving up bees. 58 hives, 41 painted, 17 unpainted, K. D. never used; 39 telescope covers; 37 super covers; 100 assembled frames; 140 drawn combs; 5 bee-boards; 5 supers, painted; 43 reversible bottom-boards, 14 painted, 34 unpainted; 200 Hoffman short bar frames, not assembled; 1 two-frame Cowan extractor, 15B; 20 Boardman entrance feeders; 10-frame equipment, used a few seasons. Best offer takes lot. Equipment as good as new. A. H. Eisenhardt, Jefferson, N. Y.



## WANTS AND EXCHANGE.

ROYAL typewriter. \$65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—Barnes beehive machine and 2-H. P. engine. Will exchange package bees for same. Tupelo Honey Co., Apalachicola, Fla.

BEEWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa. Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Partner with some cash, or manager for an established bee business of about 1200 colonies in three apiaries, well located, convenient and healthy. Reference exchanged. W. B. Gehrels, Puntarenas, Box 27, Costa Rica.

WANTED—To exchange for queens of a good strain, or will sell cheap, 65 ten-frame and 44 eight-frame Root metal-roofed double covers, slightly used but good as new, no disease. Best offer by July 15 gets them. T. L. Beasley, Claxton, Georgia.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

## SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM CLOVER SEED—Guaranteed purity, grown by ourselves; certificate of purity and germination furnished; 1 lb., \$1.00; 5 lbs., \$4.50; 25 lbs., \$21.25. Delivered prices. Write The Foster Honey Company, Boulder, Colo.

## BEEES AND QUEENS.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

HARDY Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

NOW booking orders for Miller's strain Italian queens. I. F. Miller, Brookville, Pa., 183 Valley.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

QUEENS—One untested queen, \$1.50; 6, \$7.50; 12, \$14.00; 50, \$55.00; 100, \$100. Tested queens, \$2.50. Wells D. Rose, Sunnyside, Wash.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

SPECIAL prices on queens and bees. See my ad page 288. Frank Bornhoffer, Mt. Washington, Ohio.

PINARD'S quality brand queens are the convincing kind. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—20 colonies of bees, gentle and good workers. Price reasonable. A. Nigabower, Iliou, N. Y.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, \$2.00; 6, \$10.00; or \$18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 343. Arlie Pritchard, Medina, Ohio.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, \$1.50. M. F. Perry, Bradentown, Fla.

FOR SALE—Golden Italian queens. Tested queens, \$2.50; untested, \$1.25. Queens ready June 1. J. F. Michael, Winchester, R. D. No. 1, Ind.

PACKAGE BEES—\$1.50 per pound. Untested Italian or Carniolan queens, \$1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

QUEENS.—Select three-band Italians, by return mail, \$1.25 each, \$13.00 per dozen. Write for descriptive circular. Hardin S. Foster, Columbia, Tenn.

TRY Pinard. He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, \$1.15 each; 6 for \$6.50; 12 or more, \$1.00. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. Car.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Lovett Honey Co., Phoenix, Ariz.

MERRILL'S bright three-banded Italian queens will please you. Mated and laying, \$1.00; 6, \$5.25 or \$10.00 a dozen. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FOR SALE—Bright Italian queens, 1, \$1.25; 12, \$12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodridge, Wheatridge, Colo.

FOR SALE—Three-band Italian queens, select untested, \$1.00 each; \$9.00 per doz. 2-lb. package with queen, \$5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

1500 NUCLEI for May and June. Simmons queens ready now. Fairmount Apiary, Livingston, N. Y.

FOR SALE—3-frame nuclei with tested Italian queen, \$5.50. Dr. Chas. F. Briscoe, A. & M. College, Miss.

FOR SALE—Three swarms of bees, standard hives with supers and supplies—cheap. Davis, 419 Third Ave., Haddon Heights, N. J.

FOR SALE—40 hives of bees, 20 empty hives. 43 supers and fittings, all 10-frame standard Root goods in A1 shape. Quote me price. W. J. McGarr, Millen, Ga.

BOOKED to capacity on early May orders. Heavy discounts on introduced laying-enroute-to-you queens with frames, and pounds after May 25. Jes Dalton, Bordelonville, La.

FOR SALE—Three-banded Italian queens, one untested, \$2.25; 12, \$12.00; tested, \$1.75; 12, \$18.00; 2-frame nuclei with untested queen, \$4.50. Jul Buegeler, New Ulm, Texas.

FOR bees, queens, nuclei, packages, see larger ad this issue. Annual Hubam sweet clover seed, guaranteed and scarified, delivered for \$1.00 per pound. Curd Walker, Scotts Sta., Ala.

FOR SALE—A few good strong colonies of Italian bees in May, in 10-frame hive-bodies. All queens clipped and one year old in August. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

FOR SALE—Three-banded Italian queens, untested, \$1.50 each; 6, \$8.00. Ready June 1. Satisfaction guaranteed. Chas. W. Zweily, Willow Springs, Ill.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list. Elton Warner Apiaries, Asheville, N. C.

TRY my Caucasian or Italian 3-frame nuclei at \$6.00 each with tested queen. Tested queens, \$1.50; untested, \$1.25, of either kind. No disease. Peter Schaffhouser, Havelock, N. Car.

DEPENDABLE QUEENS—Golden or three-banded, after June 1: 1, \$1.50; 6, \$8.00; 12, \$15. Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

DO IT NOW—Send for descriptive booklet, prices and testimonials of my improved strain of Italian queens. Pure mating and safe arrival guaranteed. Write J. B. Hollopeter, Rockton, Pa.

FOR SALE—Golden Italian queens ready May 1. 1 queen, \$1.25; 6, \$6.50; 12, \$12.00; 100, \$85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

LATHAM'S QUEENS are well-bred Italians. They will suit you. "She-suits-me" untested queens from May 15 to June 15, \$2.00 each, 10 or more, \$1.75 each. Allen Latham, Norwichtown, Conn.

HIGH-GRADE ITALIAN QUEENS a specialty. Order early. Prompt shipment. Laying, \$1.50; tested, \$2.50. Day-old, with introduction guaranteed in the U. S., 75c. James McKee, Riverside, Calif.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for \$6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

Two-pound package bees with untested Italian queen, \$5.00; 3 lbs., \$7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

FOR SALE—Golden Italian queens, untested, \$1.15 each; 6, \$6.50; 12 or more, \$1.00 each; select untested, \$1.60; 6 or more, \$1.50 each. Safe arrival. Hazel V. Bonkemeyer, R. D. No. 2, Randleman, N. C.

FOR SALE—Leather-colored Italian queens. tested, until June 1, \$2.50, after, \$2.00. Untested, \$1.25; 12, \$13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—Three-banded Italian queens, 1, \$1.00; 6, \$5.00; 12, \$9.00; 100, \$70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—40 colonies of pure-bred Italian bees in good 8-frame standard hives. Queens from Root, Moore and Achord. At \$12.00 per colony. Will ship in lots to suit purchaser. H. J. Avery, Katonah, N. Y.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

FOR SALE—30 colonies bees in 10-frame hives spaced 9 frames to the hive. Shipment to be made about June 1 as soon as unpacked. Write for supply catalog and price on larger orders. F. J. Rettig, Wabash, Ind.

MY 1922 queens and bees for sale, the big yellow kind, none better. Satisfaction guaranteed or money back. Price, untested, \$1.00 each; \$10.00 per doz., or \$80.00 per 100. Tested, \$1.75. E. F. Day, Honoraville, Ala.

FOR SALE—Golden Italian queens, untested about May 1, \$1.15; 6 for \$6.50; 12 or more, \$1.00 each; tested, \$2.00; select tested, \$3.00. No disease. No bees for sale. D. T. Gaster, Randleman, R. D. No. 2, N. C.

FOR CANADIAN SHIPMENTS by return mail. I have special parcel post cages for package bees. 1-lb., \$4.25; 1½-lb., \$4.75, including queen delivered to your address. Safe arrival and satisfaction. Jasper Knight, Hayneville, Ala.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, \$1.25; 6, \$7.00; 12, \$12.50; 50, \$50.00; 100, \$95.00. Tested, 1, \$2.00; 6, \$11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, \$6.50; select tested, \$7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS. Add beauty to your bee quality. Virgins, 60c; 5 for \$2.50; untested, \$1.00; 6 for \$5.00; select untested, \$1.50; 6 for \$6.50; tested, \$2.50; 5 for \$10.00; selected, \$3.00; breeders, \$5.00. Safe arrival and quality guaranteed. Foul brood has never been in this section. S. H. Hailey, Pinson, Tenn.



CAN furnish promptly 2-frame nuclei with queen, \$3.50; 3-frame nuclei with queen, \$4.50; 4-frame nuclei with queen, \$5.50. Rosedale Apiaries, J. B. Marshall and H. P. LeBlanc, Props., R. F. D., No. 2, Alexandria, La.

TWO-POUND PACKAGES with queens, \$4.75 each; 10 or more, \$4.50 each; 25 or more, \$4.25 each; discounts on pound packages after May 25. No disease. safe arrival and satisfaction guaranteed. J. J. Scott, Crowville, La.

WILLOW-DELL queens and bees have pleased. Will again be ready to handle your orders. May delivery with queen, two-frame nuclei, \$4.00; three-frame, \$5.25; Jumbo, \$4.75 and \$6.00. Shipping boxes returned collect. H. S. Ostrander, Melleville, N. Y.

BURLESON'S three-banded Italian queens, for balance of season of 1922 at \$1.00 each, or \$90.00 per 100. Safe arrival and satisfaction guaranteed. Send all orders together with money to my manager, J. W. Seay, Mathis, Texas. T. W. Burleson, Waxahachie, Texas.

PACKAGE BEES FOR IMMEDIATE DELIVERY. No disease. Safe arrival and satisfaction guaranteed. 2-lb. package with untested queen, \$5.25. By parcel post, \$5.75 prepaid. Write for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

EXPRESS is lower on northern bees. Prices no higher, 2 lbs. Italian bees with queen on comb of stores in May, \$5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, \$1.00 each, \$10.00 per doz. Virgins, 50c each or \$4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Greshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

THREE-BANDED ITALIAN QUEENS. Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15, 1. \$1.50; 6. \$7.50; 12, \$13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

SPICER'S three-band Italian queens will be ready to mail about May 20. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, \$1.25; 6, \$7.00; 12, \$13.50. Tested, \$2.50 each. Robt. B. Spicer, Wharton, N. J.

BY RETURN MAIL—Tested queens, \$2.50 each, reared last fall from our well-known strain of three-banded Italians. None better. Untested queens ready to mail April 15, \$1.50; \$13.50 per dozen. Safe arrival and satisfaction guaranteed. Also no disease ever in this locality. J. W. K. Shaw & Co., Loreauville, La., Iberia Parish.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at \$6.00; 2-frame nuclei with untested queen, \$4.50, about April 15. Young tested queen, 50c extra, or \$1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

TWO-FRAME NUCLEI—These are the ones that always go through in fine shape. They stand shipment as well as a full colony. Build up a new yard this summer with some of these two-frame nuclei. Each nucleus headed with an untested three-banded queen of this spring rearing. I offer 400 of these nuclei, bred here in Louisiana, by a noted breeder. The delivery will be made between the dates of May 15 and June 15. Safe delivery guaranteed. The wholesale price of this lot is \$4.00 each in lots of 10 or more. Address with remittance, E. D. Townsend, Marksville, La.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, \$1.50 each; 6 for \$3.00; tested, \$2.00 each; select tested, \$3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Italian queens. Prices for untested in June, \$1.50 each; 6, \$8.25; 12, \$16.00; tested, \$2.50 each. From July 1 to Oct. 1, untested, \$1.25 each; 6, \$7.00; 12, \$13.50; tested, \$2.00 each. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

FOR SALE—Golden Italian queens and bees, untested, 1 queen, \$1.00; 1 dozen, \$10.00; 100, \$75.00. 2-lb. package, with queen, \$5.00; 1-lb. package with queen, \$3.00; 12 or more, 5% off. 2-frame nucleus with queen, \$5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, May and June: \$1.50 each, 12 or more, \$1.25 each. Send for circular. J. H. Haughey Co., Berrien Springs, Mich.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, \$1.00; mated, \$2.00; 6 for \$10.00, or \$18.00 per doz.; tested, \$5.00. Breeders, \$10.00 to \$20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Packages bees for spring delivery, three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for \$5.00; 25 or more for \$4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

WE have 500 two-pound packages combless bees to offer for delivery May 15 to June 15. The above packages are three-banded stock only. These packages will go very promptly and at a very reasonable price, \$2.75 each. Let us help that weak colony by express. We guarantee safe delivery and government health certificate. Oscar Mayeux, Hamburg, La.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, \$5.00. Additional pound bees, \$1.00. Additional frame of brood, \$1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

NORTH CAROLINA BRED ITALIAN QUEENS of the reliable strain of three-band Italian bees. I have been breeding them for the last five years. They are gentle and good honey-gatherers. Try them and be convinced. I will be prepared to furnish three times as many queens as I did last year from May 1 until July 1. Untested, \$1.40 each; \$14.00 per doz.; tested, \$2.00 each; \$20.00 per doz.; select tested, \$2.75 each. Safe arrival and satisfaction guaranteed. L. Parker, R. D. No. 2, Benson, N. Car.

BEES—Engage your queens from any reliable dealer, and we will furnish you the bees. One-lb. pkg., \$1.35 each; 2-lb. pkg., \$2.50 each; 3-lb. pkg., \$3.00 each. No orders accepted for less than 5 lbs. 10% will book your order. Bees will move exact date ordered, 1500 colonies to draw from. Our apiaries are favorably located for early breeding, hence all orders filled with young, vigorous bees. Never had a case of disease in our apiaries. We are experienced shippers. We give a full guarantee safe arrival and satisfaction. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

**FOR SALE**—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, \$12.00 each; 50 to 100, \$11.50 each; 100 or more, \$11.00 per colony. Elmer Hutchinson & Son, Lake City, Mich.

**TWO-FRAME** nuclei, \$3.25; three-frame nuclei, \$4.00; two-pound package bees one frame emerging bees and honey which is equal to a pound of bees, \$3.50 each; untested three-banded Italian queen, \$1.00 each. I guarantee safe arrival and furnish health certificate. May and June delivery. This is my last advertisement for this season. C. A. Mayeux, Hamburg, La.

**CONNECTICUT** queens. Highest grade 3-banded Italians ready June 1. Select untested \$1.25 each; 6, \$6.50; 12, \$12.00; 50, \$47.50; 100, \$90. Two lbs. bees with queen, \$5.00; 3 lbs. with queen, \$7.00. Two-frame nuclei with queen, \$5.50; 3-frame with queen, \$7.50. Select virgin queens (not culls), 50c each, \$45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

**MAY** delivery, one, two and three pound packages, \$3.00, \$4.00 and \$5.00. Nuclei, \$3.00, \$4.25 and \$5.50, with select untested Italian queens. Special orders solicited. Select untested three-banded queens, April and May, \$1.25, 6 or more \$1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office, Tupelo Honey Co., Columbia, Ala.

**FOR SALE**—25 to 40 colonies Italian bees with tested Italian queens in 10-frame Dovetailed standard hives, most new and were painted, Hoffman frames and combs wired, per colony, \$15.00. Liberal discount on 25 or more colonies. Also 10 wood-and-wire queen-excluding boards, new, 60c each; 25 wood-and-wire queen-excluding boards used two years, 50c each, for 10-frame hives. S. Coulthard, 528 S. Washington St., Hastings, Mich.

**LAST** fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, \$1.25 each; 6, \$7.00; 12, \$13.50; 25 or more, \$1.00 each. After July 1, \$1.00 each straight. Julius Victor, Martinsville, N. Y.

**PACKAGE BEES**—Several hundred 2-lb. packages three-banded Italian bees, with untested queens, for May delivery at only \$4.00 per package in lots of 10 or more. From a noted breeder in Alabama. 500 colonies to draw from which should easily produce 1000 2-lb. packages during May. I offer them at this low quantity price to close them all out during this month. A good buy. Safe delivery. Address with remittance, E. D. Townsend, Marksville, La.

**FOR SALE**—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, \$1.25; 6, \$7.00; 12, \$13.00; 25 to 100, \$1.00 each. H. Peterman, R. F. D., Lathrop, Calif.

**GOOD** queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, \$1.00; selected, \$1.25; tested, \$2.00; selected, \$2.50. F. M. Russell, Roxbury, Ohio.

**BRIGHT ITALIAN QUEENS**, \$1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

**LARGE, HARDY, PROLIFIC QUEENS**—Three-banded Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, \$1.25 each; 6 for \$7.00; select untested, \$1.50 each; 6 for \$8.50; select tested, \$3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

**FOR SALE**—Two-frame nuclei Italian bees, with tested Italian queen, delivery May 1 by express f. o. b. here, \$7.50 each. Terms, \$2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County, Spahn Bros., Pleasantville, Westchester Co., N. Y.

**PACKAGE BEES**—I offer for sale 1000 2-lb. packages Italian bees with untested queens for June or July delivery, from Penn., at only \$4.00 per package in 10-package lots or more. Order this lot of bees near home and save a large express bill. 500 colonies which should easily produce 1000 packages during the season. This is a fine lot of three-banded bees at a living price and should sell at once. Safe delivery. Address with remittance, E. D. Townsend, Marksville, La.

**QUEENS AND PACKAGE BEES**—March 1 finds us ready for shipping. Let us book you for short notice shipping. Bees and queens for your unpacking time. We have just added 1200 colonies of bees to our business in Mesa, Ariz., with our Mr. Jas. Lisonbee where weather and spring conditions are ideal for March and April package bees. All queens will be shipped from our large queen yards at Sandia, Texas, where we breed our pedigreed strain of three-banded leather-colored queens from tested honey-producing mothers, and 8 miles out we breed our special golden queens that produce bees solid yellow to the tip. Very gentle, prolific and good honey-getters. 1 untested queen, \$1.50; 25 or more, \$1.25 each; 1 select untested queen, \$1.70; 25 or more, \$1.40 each; 1 select tested queen, \$3.00; tested breeder, \$5.00. 1-lb. package bees, \$2.25; 25 or more, \$2.15; 1 2-lb. package bees, \$3.75; 50 to 100, \$2.60 each. Larger size quoted on request, also parcel post packages. Safe arrival guaranteed. Send all orders to Dr. White Bee Company, Sandia, Texas.

**QUEENS AND PACKAGE BEES**—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens and package bees this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output of queen yards this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens and package bees to make shipments promptly as and when promised. We guarantee safe arrival of queens and package bees. Prices—Mated, untested queens: 1, \$1.00; 6, \$5.50; 12, \$9.60; 13 to 99, 75c each; 100 or more, 70c each. Package Bees—Write for special price. Terms, 10 per cent deposit on booking order; balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations). Claus Spreckels Building, No. 703 Market Street, San Francisco, California.



**MISCELLANEOUS.**

MAPLE sugar, pails and cakes. Write for prices. W. A. Grover, Honey Hill Farm, Bristol, Vt.

FOX HUNTING—Beekeepers, I have a litter of thoroughbred Walker pups, beauties, at \$10 each. Papers furnished. Also one two-year-old H. S. Ostrander, Mellenville, N. Y.

TYPEWRITERS—All makes slightly used; \$20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as \$10,000 per acre for each crop. It takes several years to mature but will average \$1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. \$1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

**HELP WANTED.**

WANTED—Man with some experience to work in our apiaries. State age, experience and wages. Answer fully in first letter. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

**SITUATION WANTED.**

A YOUNG German man, professional experienced bee-raiser wishes employment. E. Pfeil, 25 Division St., Jamaica, L. I., N. Y.

MAN with 30 years' experience wants position as apiarist or bee inspector. E. H. Vincent, Miami, Okla.

WANTED—Position with bees. Have 10 years' experience with commercial apiaries. State conditions. J. Vick, Box No. 78, Corozal, P. R.

WANTED—Work for the summer, with an American, Christian family, by an experienced farmer, beekeeper, teacher and Christian worker. Manager or helper. Address P. O. Box 551, Ottumwa, Iowa. 558

**Golden Queens, 1922**

Untested, \$1.25 each, or \$12.00 per dozen; \$90.00 per hundred. Tested, \$2.00 each. Two-pound packages, each delivered with untested queen, \$6.50; two-frame nuclei with untested queen, delivered, \$6.50. Satisfaction guaranteed and shipments from April 15th.

R. O. COX, Box 25, Rutledge, Ala.

**QUEENS -- QUEENS**

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested, 1, \$1.25; 6, \$6.50; 12, \$12. After July 1: 1, \$1; 6, \$5; tested, \$1.50 each. Write for price on large orders. Free booklet, "How to Transfer. Get Honey and Increase."

J. M. GINGERICH, KALONA, IOWA.

**BEES—ITALIAN BEES—BEES**

Full colonies with Italian queen at \$15; 2 for \$25. 3-frame nucleus with Italian queen at \$6.50. 3-lb. package with Italian queen at \$6.50. No disease.

Safe arrival and satisfaction guaranteed.

**VAN'S HONEY FARMS**

Van Wyngarden Bros., Props. Hebron, Indiana.

## We Are the HUB for HUBAM

Guaranteed, certified, Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is \$2.00 per pound.

With each and every order for Hubam we will include FREE a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

**THE HENRY FIELD SEED COMPANY  
SHENANDOAH, IOWA.**

## Annual Sweet Clover Seed for Sale at Low Prices

NOW IS THE TIME TO PLANT.

Fifteen years ago M. C. Berry discovered this wonderful plant growing on the "Old Gilmer Plantation," near Tyson, Ala. Since that time we have watched with interest its great spread and growth throughout Alabama. As a plow-under green manure crop it has no equal and for honey we find it wonderful. In gathering this seed we had a lot that through a misunderstanding was mixed with Biennial. Our loss your gain, as we are selling these seed at unheard of low prices as long as they last.

**PRICES AS FOLLOWS. TRANSPORTATION PREPAID.**

5 to 10 pounds, 25c a pound; 25 to 50 pounds, 20c a pound.

50 to 100 pounds, 17½c a pound; 100 pounds and up, 15c a pound.

Seed is guaranteed to be pure Sweet Clover running from 50 to 90 per cent pure annual and the balance pure biennial. All seed are hulled, and scarified germination guaranteed to please.

**M. C. BERRY & CO.**

BOX 697, MONTGOMERY, ALA., U. S. A.

## QUEENS

Bright Three-Banded  
Italian.

## QUEENS

Bright Three-Banded  
Italian.

# Package Bees

We are now booking orders for queens and package bees for the season of 1922.

Shipments of queens and package bees this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output of queen yards this season is five thousand queens per month.

We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led those twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens and package bees to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens and package bees. Any queens or package bees arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Company of California, No. 52 Main Street, San Francisco, California, and No. 1824 E. Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers' Review, Lansing, Michigan.

Banking references upon request.

We respectfully solicit your patronage.

## Prices and Terms

### MATED UNTESTED QUEENS

1 .....	\$1.00
6 .....	5.50
12 .....	9.60
13 to 99, each...	.75
100 or more, ea.	.70

### PACKAGE BEES.

Write for special Price.

### TERMS.

10% deposit on booking order.  
Balance at time of shipment.

## WESTERN BEE FARMS CORPORATION

(PRINCIPAL)

Westen Honey Corporation :: Western Citrus Honey Corporation  
(ASSOCIATED CORPORATIONS)

General Offices: Claus Spreckels Building, No. 703 Market Street, San Francisco, California.



# One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

## Standard Size.

Crate of Five, K. D., 8-frame.....\$12.65

Crate of five, K. D., 10-frame..... 13.25

## Jumbo Size.

Crate of five, K. D., 10-frame..... 14.25

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## Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard Size, crate of five, K. D., 8-frame.\$5.20

Standard Size, crate of five, K. D., 10-frame. 5.85

Jumbo Size, crate of five, K. D., 10-frame... 6.85

-0- -0- -0-

## Hoffman Frames

Standard Size .....100, \$5.20; 500, \$25.00

Shallow .....100, 4.30; 500, 21.00

Jumbo .....100, 5.80; 500, 28.00

-0- -0- -0-

## Diamond Brand Foundation

Medium .....5 lbs., 68c lb.; 50 lbs., 65c lb.

Thin Super .....5 lbs., 75c lb.; 50 lbs., 72c lb.

-0- -0- -0-

We carry Aluminum Honeycombs as now  
made by Duffy-Diehl Company, in stock  
to supply Eastern Beekeepers.

Standard Langstroth .....\$5.00 box of 10

Shallow Extracting ..... 4.00 box of 10

Jumbo ..... 6.00 box of 10

**HOFFMAN & HAUCK, INC.**  
WOODHAVEN, NEW YORK

## Special Notices by A. I. Root

## WIND ELECTRICITY.

After my statement in the March number had gone out, I realized it didn't cover the ground very well. Since that date we have had wind, so that during March the engine was hardly used at all. In fact, we run the auto on longer trips than before, light the premises, run an electric fireless cooker and I have a warming pad to warm my feet nights—and the wind (often cold north winds) does it all nicely. The engine only gives 16 amperes steadily, while the windmills often give 25, and sometimes even 30 for a brief interval. This is all right for heating and cooking, and the batteries in that case are used little or not at all.



## The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.

306 E. 5th St., Canton, O.

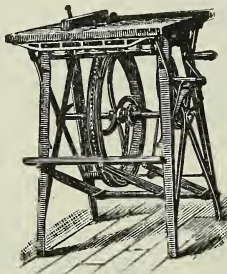
## BARNES' HAND &amp; FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

## Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.  
545 Ruby Street  
ROCKFORD, ILLINOIS.



## PATENTS

Practice in Patent Office and Court.  
Pat. Counsel of The A. I. Root Co.  
CHAS. J. WILLIAMSON,  
McLachlan Bldg., Washington, D. C.

## 30 Days' Free Trial

Select from 44 Styles, colors and sizes, famous Ranger bicycles. Shipped free on approval, express prepaid, at Factory Prices. You can easily Save \$10 to \$25.

12 Months to Pay if desired. Parents often advance first deposit. Boys can earn small payments.

Tires Wheels, lamps, horns, equipment at half usual prices. Send No Money. Write for our marvelous prices and terms.

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Dept. H Chicago



Write us today for free catalog

## World's Best Roofing

at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Shingles, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

### Edwards "Reo" Metal Shingles

have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

**LOW PRICED GARAGES**  
Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.  
**THE EDWARDS MFG. CO.**  
533-583 Pike St. Cincinnati, O.

**Free Roofing Book**  
Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

**FREE**  
Samples & Roofing Book

TALKING LAWS' QUEENS QUEENS  
SPEAK FOR THEMSELVES

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my "queens and business methods are very satisfactory." Another writes, "Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it."

**PRICES:** Untested, each, \$1.25; 12 for \$12. Tested, each, \$1.50; 12 for \$15. Breeding queens, none better if as good, each, by mail, \$5; or with a 3-frame nucleus of her own bees by express, \$10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS



"Marugg's Special"

IMPORTED  
MOWING  
BLADES

And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.



# A-T-T-E-N-T-I-O-N!

## OHIO AND WEST VIRGINIA BEEKEEPERS.

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

**MOORE & PEIRCE**  
Zanesville, Ohio—"Beedom's Capital."

### Three-banded Italians for May Shipments.

	1	12	100
Untested Queens	\$1.00	\$11.00	\$ 75.00
Select Untested	1.25	13.00	100.00
Tested Queens	1.35	15.00	125.00
Breeders			\$5.00 each

Safe arrival and satisfaction guaranteed.

**H. L. MURRY, SOSO, MISS.**

**INDIANOLA APIARY** offers Italian Bees and Queens for following prices: Untested Queens, \$1.00 each; Tested Queens, \$1.50 each. Bees, per lb., \$2.00. Nucleus, \$2.00 per frame. No disease. Bees inspected.

**J. W. SHERMAN,**  
Valdosta, Georgia.

### ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

**O. G. RAWSON,**  
3208 Forest Place, East St. Louis, Illinois.

## Queens of Quality

—from—  
**Tennessee**

3-band Italians only.

Untested, \$1.25 each; six for \$7.00;  
\$12.00 per dozen. Ready about May  
10th Circular free.

**J. I. BANKS, DOWELLTOWN, TENN.**

—QUEENS OF—

## MOORE'S STRAIN

OF ITALIANS PRODUCE  
WORKERS

That fill the supers quick  
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens \$1.50; 6, \$8; 12, \$15.00. Select untested, \$2; 6, \$10.00; 12, \$19.00. Safe arrival and satisfaction guaranteed. Circular free.

**J. P. MOORE, Queen Breeder,**  
Route 1, Morgan, Kentucky.

## PATENTS --- TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT**, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.

## MASON BEE SUPPLY COMPANY MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

**PROMPT AND EFFICIENT SERVICE**

**BECAUSE**—Only Root's Goods are sold.

It is a business with us—not a side line.

Eight mails daily—Two lines of railway.

If you have not received 1922 catalog send name at once.

## NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

## H. H. JEPSON

182 Friend Street.

BOSTON 14, MASS.

## QUEENS OF QUALITY.

When you want them at the lowest prices possible for high quality queens.

Untested ..... 1 to 12, \$1.00 each

Select Untested ..... 1 to 12, \$1.25 each

Entire satisfaction and safe arrival guaranteed in U. S. A. and Canada; will start shipping about May 20.

**OHIO VALLEY BEE CO., CATLETTSBURG, KY.**

## MAY QUEENS PRICED RIGHT

UNTESTED, \$1.20 EACH. 12 OR MORE, \$1.00.  
SELECTED UNTESTED, \$1.50. TESTED, \$2.00.

Satisfaction guaranteed. No Disease.

## D. W. HOWELL

SHELLMAN, GEORGIA. BOX A3.

## Q-U-E-E-N-S

Select three-banded Italians that will please. Our bees are unexcelled for gentleness, disease-resisting qualities and honey production. Pure mating and satisfaction guaranteed.

	1	6	12
Untested	\$1.25	\$ 7.00	\$13.00
Select Untested	1.50	8.00	14.00
Tested	2.50	13.00	25.00
Select Tested	3.00	16.00	30.00
Select Tested Breeders			\$5.00

Day-old queens.....40c each

Queens ready to ship by return mail. Queens' wings clipped free of charge. Write for descriptive circular and prices per hundred.

## HARDIN S. FOSTER

COLUMBIA - - - - TENNESSEE

## "Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.

## BANKING BY MAIL AT

**A.T. Spitzer**  
PRES.

**E.R. Root**  
VICE PRES.

**E.B. Spitzer**  
CASHIER

### ONE DOLLAR DEPOSITS FROM OUT-OF-TOWN CUSTOMERS

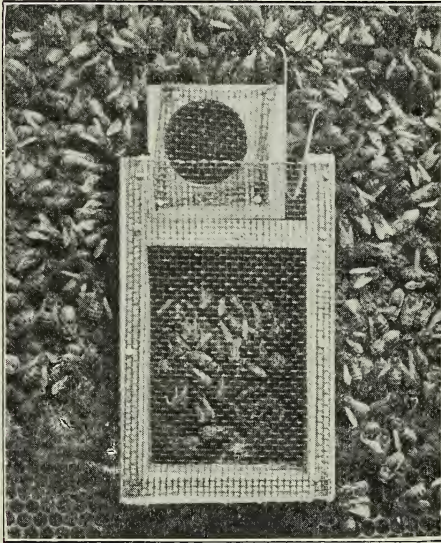
The Savings Deposit Bank Company welcomes Savings Accounts in any sums from a dollar up.

Deposits by mail are received from those who find it inconvenient to call personally.

**4%**

**The SAVINGS DEPOSIT BANK CO.**  
THE HOME OF THE HONEY-BEE MEDINA, OHIO

## Save Those Queens



(Patent pending.)

A large percentage of queens are lost through faulty methods of introduction, and many more are injured so that they produce little or no honey where they would have produced several hundred pounds if they had been properly introduced. The Jay Smith cage will introduce every one with absolutely no injury, if the simple directions are followed.

It will introduce virgins to full colonies, and it will introduce either virgins or laying queens to laying-worker colonies. It will save many times its cost in a season. Hundreds of these cages have been used all over the U. S. with unqualified success.

J. E. Crane, one of America's foremost beekeepers, writes: "It is the best of anything I have seen." M. H. Mendleson of California, than whom there is no higher authority upon this subject, after purchasing 200 of these cages, writes: "From extensive experiments in introducing many queens, we have had perfect success, never losing a queen nor having a single failure with the Smith cage. We have even had entire success in introducing queens to laying-worker colonies." The cage is well made and should last a lifetime if taken care of. Price postpaid, 75 cents. Write for descriptive circular.

**JAY SMITH.**

Route 3. VINCENNES, IND.

### ITALIAN QUEENS.

Three-banded. Ready June 1. Satisfaction guaranteed. Untested, \$1.50 each; 6, \$8.00; tested, \$2.50 each; 6, \$14.00. Will book orders now.

**CHAS. W. ZWEILY,**  
Willow Springs, Illinois.

### Too Late for Classification.

SEE Thagard's ad elsewhere back to pre-war day prices.

**WANTED**—Position in apiary by experienced beekeeper. Address Box No. 45, East Downingtown, Pa.

**FOR SALE**—2 locations, about 500 colonies bees, in good cypress and white pine 10-frame hives. Am moving to another part of the state R. H. Fryer, Sumatra, Fla.

**FOR SALE**—20 acres of land in Florida 10 acres good timber; ideal location for large apiary in famous tupelo belt; fertile soil grows fruits, vegetables, pecans, etc.; wonderful climate, hunting, fishing, etc.; good reason for selling; \$50 per acre. W. I. Keiter, Cherrydale, Va.

**FOR SALE**—250 colonies of bees, all in 10-frame hives, practically all new equipment, a splendid orange and sage location with an eight-room house, modern, plenty of land and in one of the best sections of Southern California. Will sell everything, property furnished ready to move into. Can give possession at once. Honey flow should last until middle of August. Address C. A. Wurth, R. D. No. 1, Box 167, Riverside, Calif.



Ready now, 3-banded Italian queens, the famous Dr. Miller and my own stock. Prices: Untested, \$1.25 each, 6 for \$7.00, 12 for \$13. Selects, 25c each higher; clipping free. Tested, \$2.00 each, 6 for \$11, 12 for \$20. Write for prices on larger lots. 3-frame nucleus with untested queen, \$5.50; without queen, \$4.25. Bees, one pound \$2.00; two pounds, \$3.75; three pounds, \$5.25. (Add price of queens to same.)

As I have just got located in my new location I am not booked very heavy with orders; so, if you want bees and queens from the south early, give me a list of what you want booked, and date of shipment. A square deal to all my customers, new as well as old. 20 years' experience with the bees. 10 years rearing and shipping bees; give me a chance. I will surely try to treat you squarely.

CURD WALKER,  
(Formerly of Jellico, Tenn.) Scotts Station, Ala.

## QUALITY BEES

From the apiaries of E. R. King, formerly Deputy State Inspector of Apiaries in Ohio, later in charge of Apiculture at Cornell University.

MAY JUNE JULY

Full colony in 1-story 10-fr. hive with tested queen...	\$17.00	\$14.50	\$12.00
Two-frame nucleus with untested queen .....	6.75	5.50	4.00
2-lb. package of bees with untested queen .....	5.75	4.75	4.00
Untested Italian queen.....	1.25	1.00	

First shipments can be made about May 15. 20 per cent payable with order, remainder at shipment. Price reductions for quantity orders.

### KING'S APIARIES

McARTHUR, OHIO.

## QUEENS

Reared from the best breeders obtainable in strong ten-frame colonies. Mated in four-frame nuclei. Delivered after April 10th at the following prices:

Untested—1. \$1.25; 5, \$5.50; 10, \$10.00.  
Tested—1, \$2.00; 10, \$17.00.

### PACKAGE BEES WITH QUEENS.

1-lb. package, \$3.50; 10 or more, \$3.25 each.  
2-lb. package, \$5.25; 10 or more, \$5.00 each.  
Situated to promptly supply Western and Northwestern Beekeepers. Safe arrival and satisfaction guaranteed.

THE ORANGE APIARIES, PORTERVILLE, CALIF.

O. F. Darnell, Prop. M. S. Fortune, Breeder.

# Three-Banded Italian QUEENS

Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, \$1.50; 6, \$7.50; 12, \$13.50. All orders filled in rotation. First on list will be first filled.

J. D. KROHA, 87 North St., Danbury, Conn.

## Northern-bred Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1 Untested Queen.....	\$ 1.50
6 Untested Queens.....	7.50
12 Untested Queens.....	14.00
50 Untested Queens.....	55.00
100 Untested Queens.....	100.00
Tested Queens, each.....	2.50

WELLS D. ROSE

Sunnyside, Washington

# SCOTT QUEENS ARE GOOD QUEENS

### MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: "Dear Mr. Scott: Please book me for ½ dozen queens. Those I got from you last season have made 150 lbs. comb honey so far this season. Yours truly."—(Name on request.)

### UNTESTED GOLDEN OR THREE-BANDED QUEENS.

June 1 to July 15: One, \$1.50; six, \$8.00; dozen, \$15.00. Pure mating, safe arrival and satisfaction. No disease. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

## 3-BAND ITALIANS

Our queen-rearing department is under the supervision of H. D. Murry, well known to the trade as a breeder of GOOD QUEENS. Reared from stock that put up 250 pounds surplus honey. Prompt and satisfactory service.

Untested, \$1.25; 6, \$7.00; 12, \$13.50; 25 or more, \$1.00. Tested, \$2.00.

**MURRY & BROWN**  
MATHIS, TEXAS.

## QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash.

Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.

Untested .....\$1.25; over 25, \$1.00 each

Sel. Unt. .... 1.50; over 25, 1.25 each

Tested ..... 2.50; over 25, 2.25 each

Selected Tested ..... 3.00 each

See our Dec. and Jan. Advertisement.

**JOHN G. MILLER**

723 C Street, Corpus Christi, Texas.

## QUEENS

Three-banded Italian Queens that must please. Pure mating and satisfaction guaranteed. We do not claim to have the best, but do claim them to be as good. Untested Queens, \$1.25 each. Twelve or more, \$1.10 each. Tested Queens, \$1.60 each. Twelve or more, \$1.40 each.

### CYPRESS BEE SUPPLIES

Hives, hive-bodies, bottom-boards, covers, frames, foundation, etc. Write for prices. All queens shipped from Crawford, Miss.; all supplies shipped from Coker, Ala.

### THE ABSTON APIARIES

Crawford, Miss.

Coker, Ala.

## Newman's Queens

ORIGINATED FROM THE WORLD-FAMOUS MOORE STRAIN OF ITALIANS. ABSOLUTELY FIRST QUALITY AND FULLY GUARANTEED. NO DISEASE. SATISFACTION AND SAFE ARRIVAL.

Untested \$1.25; 6, \$7.00; 12, \$13.50.  
Select Untested, \$1.75; 6, \$9.00; 12, \$17.00.

Circular free.

A. H. NEWMAN, QUEEN-BREEDER.  
MORGAN, KY.

## MOTT'S NORTHERN-BRED ITALIAN QUEENS

All are selected queens this season.

Select Untested, \$1.50 each, \$15.00 per doz.  
Sel. Guaranteed pure mated, or replace free, \$1.75 each, \$18.00 per doz. Sel. Tested, \$2.50. Virgins (not mated), 75c each, \$8.00 per doz. After June 1st, 10% off to the Canadian trade to help out on exchange.

Plans "How to Introduce Queens" and "Increase," 25c.

**E. E. MOTT**  
GLENWOOD, MICHIGAN.

## Quigley Quality

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Tested May and June .....\$3.00

Fine Breeders .....\$10.00

Untested, May and June.....\$ 2.00

Six for .....\$11.00

3-frame Nuclei, tested queen.....\$ 7.50

Send for circular.

E. F. QUIGLEY & SON,  
Unionville, Missouri.

## BURLESON'S OLD RELIABLE Three-Banded Italian Queens

**NONE BETTER**—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

**These are My 1922 Prices**—Untested, \$1.25 each; \$13.50 per doz; 25 or more, \$1 each. Select Untested, \$1.50 each; \$15 per doz., 25 or more, \$1.15 each. Select tested, \$3 each.

Considering the high quality of my queens combined with service and reliability justifies the above prices. Send all orders together with remittance to

**J. W. SEAY, Mgr., MATHIS, TEXAS**

**T. W. BURLESON, WAXAHACHIE, TEXAS.**



## That Pritchard Queens AND Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are **BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.**

### THREE-BANDED ITALIANS.

Untested .....\$1.25 each; 6 for \$7.00  
Select Untested.\$1.50 each; 6 for \$8.50  
Select Tested .....each \$3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1.

**ARLIE PRITCHARD**

R. F. D. No. 3.

MEDINA, OHIO

## YOUR MONEY'S WORTH --OR-- YOUR MONEY BACK



Williams' queens of quality are good; we know it; let us prove it to you. They have pleased many. Write for free circular.

Pure mating, safe arrival and satisfaction guaranteed.

Select Untested,  
\$1.25.

Tested,  
\$2.00.

**P. M. WILLIAMS**

FORT DEPOSIT - ALABAMA

## Our Special May Offer on Packages

### Transportation Paid

Twenty-six years of select breeding gives us a strain of bright Three-banded Italian Bees that are unsurpassed for their disease-resisting and honey-gathering qualities.

### DELIVERY MAY 10 TO JUNE 1.

All packages with young select queens.  
1-lb. pkgs., \$3.50 each; 6, \$3.25 each; 12 or more, \$3.00 each.  
2-lb. pkgs., \$5.00 each; 6, \$4.75 each; 12 or more, \$4.50 each.  
3-lb. pkgs., \$6.25 each; 6, \$6.00 each; 12 or more, \$5.75 each.

Untested select queens, \$1.25 each.  
Tested select, \$2.50 each.

We guarantee our bees to give absolute satisfaction and to arrive in perfect condition. Our strain has pleased thousands of others. Give them a chance to please you. They know how. Our little booklet free for the asking. It tells all about our bees and how to handle them for best results.

**M. C. BERRY & CO.**

BOX 697, MONTGOMERY, ALA. U. S. A.  
(Formerly Hayneville, Ala.)

## QUEENS

Pure Three-Band Italians Only.  
Select Breeding.

Best methods and equipment as approved by up-to-date authorities. You can get none better at any price. Our free folder will tell you what others say about them. A trial order will convince you that they have the qualities desired.

### PRICES AND TERMS.

Untested, 1 to 12, \$1.10 each; 13 to 25, \$1.00 each; 26 to 100, 90c each. Select untested, add 25c per queen. Tested, \$1.75. Select Tested, \$2.00. Breeders, \$7.50 and \$10.00 each on a one-frame nucleus.

For delivery after June 1st, deduct 10% from above. Send 20% to book, and balance before shipment is wanted. Pure mating, safe arrival and complete satisfaction guaranteed. No more package bees or nuclei this season.

**JENSEN'S APIARIES**

R. F. D. No. 3, CRAWFORD, MISS.

DON'T DELAY---GET OUR PRICES  
WE SAVE YOU MONEY

**"falcon"**

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown) NEW YORK

*"Where the best beehives come from."*

CENTRALLY

LOCATED

TO

SERVE

NEW

ENGLAND

BEEKEEPERS.

**Root**  
**QUALITY**



ORDERS

FILLED

PROMPTLY.

CATALOG

ON

REQUEST.

**BEE SUPPLIES**

F. COOMBS & SONS, BRATTLEBORO, VERMONT

*Do You Want a Big Honey Crop for 1922?*

**Thagard's Italian Queens**

**BRED FOR QUALITY**

Will produce workers that will gather a mammoth honey crop for you. Prompt service and perfect satisfaction guaranteed. We are back to Pre-War days prices on queens and bees. Catalog free.

**UNTESTED**

1 to 12, \$1.00 each; 12 to 49, each, 95c;  
49 to 99, 85c each; 100 or more, 80c each.

If you want untested queens bred from any special breeders, the price will be:  
1 to 5, \$1.50 each; 5 to 12, \$1.10; 12 to 50, \$1.00 each.

**ITALIAN BEES—WITH ITALIAN QUEENS.**

1-pound package.....\$3.00  
2-pound package..... 5.00

V. R. THAGARD CO. - - GREENVILLE, ALABAMA.



**3000 Monthly  
Capacity**

**65c EACH**

**Prompt  
Shipment**

## Untested Queens

In order to keep working at full capacity we are making a big cut in the price of

### Forehand's Three-Bands

#### The Thrifty Kind

Thirty years of experience go into the rearing of our queens. Select breeding for over a quarter of a century brings them up to a standard surpassed by none but superior to many.

We guarantee pure mating and satisfaction the world over. Safe arrival guaranteed in the U. S. and Canada. For the balance of the season we are selling bees in combless packages only. We have several thousand queens ready for shipment. Send in your order at once.

#### UNTESTED QUEENS EACH.

1, \$1.00; 6 to 11, 95c; 12 to 49, 90c; 50 to 99, 85c; 100 to 249, 80c; 250 to 499, 75c; 500 to 1000, 65c. Prices quoted on other grades upon application.

#### POUND BEES.

1 one-lb. pkg...\$2.00; 25 and over, \$1.90  
1 two-lb. pkg... 3.50; 25 and over, 3.25  
1 three-lb. pkg.. 5.00; 25 and over, 4.75  
Catalog sent free.

**W. J. FOREHAND & SONS, Fort Deposit, Alabama**

## Special Low Prices For May Delivery

Transportation Prepaid on Everything We Ship.

1000 Full Colonies. 1000 Nuclei.

We have the bees and queens and they must ride.

#### Prices of Packages with Young Queens

1-lb. pkgs., \$3.00 each; 6 to 12, \$2.75 each; 12 and up, \$2.50 each.

2-lb. pkgs., \$5.00 each; 6 to 12, \$4.75 each; 12 and up, \$4.50 each.

3-lb. pkgs., \$6.00 each; 6 to 12, \$5.75 each; 12 and up, \$5.50 each.

Untested select queens, 75c each.

Tested select queens, \$1.50 each.

#### REMEMBER WE PAY ALL MAIL OR EXPRESS CHARGES.

Our bees are wonderful honey-gatherers, gentle and very resistant to disease. Others perhaps as good but none better. Wings clipped free of charge on request. Safe arrival and full satisfaction guaranteed. To know us try us. To know our bees try them. We ship promptly or return your money.

**Hayneville Apiary Co.**  
HAYNEVILLE, ALA.

## When You Want

quality, disease-resisting, and honey-gatherers why not Root's strain that has been tested out for over 50 years? I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember you get what you order with a guarantee backed by years of experience.

#### PRICES TO JULY 1.

Untested Queens, 1, \$1.25, 12, \$13.80, 100 \$90.00. Select Untested, 1, \$1.60. Tested, 1, \$2.00. Select Tested, \$2.40.

After July 1, 10% discount.

Write for circular.

**A. J. PINARD**

440 North 6th Street, SAN JOSE, CALIF.

# A Big Honey Crop

Have you learned the secret of a bumper honey crop? If you will head your colonies with young prolific queens, your yield will surely be greater. Buy your queens from L. L. Forehand. They have been on the market for over twenty years. **THEY ARE BRED FROM IMPORTED MOTHERS.** They cannot be beaten for honey-gathering, gentleness, prolificness, disease-resisting and non-swarming.

## Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and to give perfect satisfaction. I will return your money or replace queens that are not satisfactory in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12	100
Untested .....	\$1.50	\$7.50	\$13.50	\$1.00 each
Selected Untested .....	1.75	9.00	16.50	1.25 each
Tested .....	2.50	13.00	24.50	2.00 each
Selected Tested .....	4.00	22.00	41.50	3.35 each

Send for circular. It contains useful information.

**L. L. FOREHAND, Fort Deposit, Alabama**

## 3000 Young Vigorous Italian Queens For May and June Delivery

*Highest Quality*

*Prompt Service*

**M**R. BEEKEEPER:—I will have 3000 young vigorous Italian Queens for sale during May and June. During my 15 years of experience with bees I have bought some of the finest Breeding Queens that could be obtained, and have improved them to the highest point. I now have a strain of bees that I positively guarantee cannot be excelled, at the right price. If you do not believe what I say about these queens, give me a trial order and order the same amount from any breeder you may wish and see for yourself. Why pay \$2.00 or \$3.00 for your queens when you can get the same strain at a much lower price? Those queens are reared with the greatest care that can be given to queen-rearing, and I positively guarantee that you cannot buy any better. A limited number of extra-fine selected tested queens that would make fine breeding queens at \$4.00 each. Safe delivery and entire satisfaction positively **GUARANTEED.**

**MY PRICES**—Untested: 1, \$1.25; 6, \$6.50; 12, \$12.00; 100, \$85.00. Selected Untested: 1, \$1.50; 6, \$7.00; 12, \$13.00; 100, \$90.00. Tested—1, \$2.50; Selected Tested, \$3.00

**POUND PACKAGES WITH SELECTED UNTESTED QUEENS,** Shipment by return express: 1-lb. packages, 1 to 12, \$3.75 each; 12 or more, \$3.50 each. 2-lb. packages, 1 to 12, \$5.00 each; 12 or more, \$4.75 each.

**The Farmer Apiaries, Ramer, Alabama.**





# QUEENS

The successful beekeeper is the one who has the strongest colonies just as the honey flow opens. Do you know of anything that gives more downright pleasure to the beekeeper than to have all colonies extra strong, to have all hives filled with emerging brood, and to have hives and supers crowded with bees just as the honey flow begins? And when a thunder storm suddenly comes up, doesn't it make one's soul glad to see the beautiful yellow bees pour into their hives in countless hordes so as to darken the sky? If a large percentage of your colonies are not in this condition, there is still something to be desired in your management. In a majority of the cases where indifferent work is accomplished by certain colonies, it is due to old or inferior queens. Many have noticed a marked increase in the amount of honey secured after purchasing some of our queens and requeening with them or their progeny. Then again, it is a great pleasure to work with gentle bees. Isn't it a plaguy nuisance to have cross blacks or hybrids and have the pesky things dancing around in front of your face for hours at a time? Our bees are never guilty of such indecorous conduct.

Our cells are built in powerful colonies, made excessively strong by adding brood taken from other colonies, so that the larva in the queen-cell has more royal jelly than it can possibly consume. Scientific research has proved what we have long known in a practical way—the magic of royal jelly. Our embryonic queens have it in abundance. In addition, our queens are not hatched in cell protectors or nursery cages so that the emerging queen has every opportunity to measure up to the high standard for which our queens are noted. The strongest guarantee goes with every queen.

## Queen Prices

### Before August First.

- 1 to 4 inclusive, \$2.50 each
- 5 to 9 inclusive, 2.45 each
- 10 or more, . . . . 2.40 each

### After August First.

- 1 to 4 inclusive, \$2.00 each
- 5 to 9 inclusive, 1.95 each
- 10 or more, . . . . 1.90 each

Breeding Queens,  
for the season,  
\$10.00 each.

A card will  
bring our  
1922 catalog.

JAY SMITH, Route 3, VINCENNES, IND.

## Queens----Rhode Island----Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, \$1.25 each; 6 for \$7.00.

Queens delivered after June 1.

O. E. TULIP, Arlington, Rhode Island.  
56 Lawrence Street.

## THREE-BAND QUEENS.

As good as can be found in Beedom. May and June:  
Untested . . . . . \$1.25; \$13.50 doz.; 25, \$1.00 each  
Select Untested. . . 1.50; 16.20 doz.; 25, 1.25 each  
Select Tested. . . . 2.50; 27.00 doz.; 25, 2.00 each

All queens fully guaranteed.  
Send for circular.

Herman McConnell, Robinson, Illinois.

## BEES QUEENS FROM GEORGIA

## THREE-BANDED ITALIANS

QUEENS—Untested, \$1.00. Tested, \$1.50. BEES—1 pound, \$2.00; 2 pounds, \$4.00; 3 pounds, \$6.00. NUCLEI—1-frame, \$3.00; 2-frame, \$4.00; 3-frame, \$6.00. Discounts on quantity orders. Your satisfaction guaranteed. Disease resisting, and from yards certified free from disease. Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE, INC., 5495 Grand River Avenue, Detroit, Mich.

# MAY ANNOUNCEMENT

## *Bee Supplies*

They are all "Root Quality." Our line is complete. You will do well by getting your supplies early. Send for our catalog.

## *Beginner's Outfits*

We are offering a New Outfit, very moderate in price. Send for circular.

## *Friction Top Pails*

2½-lb. cans, 5-lb. and 10-lb. pails. New prices now in effect. How many do you want?

## *"A" Grade Paste*

For tin pails—it sticks. One pint, 25c; one quart, 45c; one gallon, \$1.50. Remember it sticks.

## *A Million Berry Baskets*

and crates to hold them. "A" grade wood baskets. Wax-lined paper baskets. Send for price list.

*Beeswax Wanted for Cash or Goods*

# M. H. HUNT & SON

510 N. Cedar Street.

LANSING, MICHIGAN





## Achord's Italians Are Good Bees

Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain bred primarily for honey production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15th.

### Price of Packages, April and May, F. O. B. Shipping Point, by Express.

1-pound package.....	\$2.25	25 or more .....	\$2.15	50 or more .....	\$2.00
2-pound package.....	3.75	25 or more .....	3.50	50 or more .....	3.35
3-pound package.....	5.25	25 or more .....	5.00	50 or more .....	4.85

Add price of queen to package price given above.

### Price of Queens, April and May.

Untested, each .....	\$1.25	Ten or more.....	\$1.15 each	25 or more.....	\$1.00 each
Select Untested .....	1.35	Ten or more.....	1.25 each	25 or more.....	1.15 each
Tested, each .....	2.00	Ten or more.....	1.75 each		

We guarantee safe arrival and satisfaction.

**W. D. ACHORD, FITZPATRICK, ALABAMA.**



# Over 200 Miles of Pure Sheeted Beeswax

*Was made into Airco Foundation and sold during the single month of March, 1922.  
Over 27 tons were made and sold from Medina.*

You can judge for yourself as to why AIRCO has made such a wonderful record, and has caused this unprecedented demand. Ask the man who uses AIRCO.

## *Here is a Scientific Fact That Will Interest Every Beekeeper*

Authorities have estimated that it takes about 15 pounds of honey to produce one pound of beeswax, such as is used in making foundation. In other words, if the bees have to draw out combs without having full sheets of foundation to start on, they consume about 15 pounds of honey for each pound of wax produced in comb-building. If given comb foundation to work upon, this much honey may be saved per pound of foundation used.

Can any beekeeper afford to go without full sheets of foundation in his supers after knowing the above fact?

It will pay you well to save the bees' time and energy by getting AIRCO foundation—the only foundation made which has the perfect cell base.

*Send for sample of Airco Foundation.*

## *Our New Indestructible Combs*

For years we have been experimenting on non-sagging, indestructible wax foundation. Our experiments have included wires incorporated in the comb foundation, foundation with wire-cloth base, as well as foundation having a base of thin sheet metal, celluloid, cloth, bakelite, cardboard, fibre and wood veneer. So far, the wood-base foundation is away ahead of anything else we have tried out. Made up with the thin top-bar frame, allowing for two full rows of added cell-space, these combs allow from 20% to 25% more worker brood area, as no drone comb is made on these combs. Sagging is impossible.

We are now in position to furnish beekeepers with a few frames with this foundation for experimental purposes. Supplied only in thin top-bar frames ready for use at 50c each, or \$5.00 for 10. For the present season we will not be able to supply more than 10 frames to any one beekeeper, as we are already far behind on orders.

We would like the opinion of beekeepers on this new product.

## THE A. I. ROOT COMPANY

*"52 Years in the Bee Supply Industry"*

MEDINA, OHIO

New York, Chicago, Philadelphia, St. Paul, Indianapolis, Norfolk, New Orleans, Syracuse.

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